THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XI. No. 257—14th YEAR.] LONDON, AUGUST 26, 1862. [Subscription per Ann. { 15s. in Advance / 18s Credit.] Price 8d. Unstamped.

CANNEL COAL.

RAMSAY'S NEWCASTLE CANNEL has become the principal Cannel Coal used in the Metropolis. Its joint products of gas of high illuminating power, and coke of good quality, make it one of the most economical coals known. The Crystal Palace was lighted from it in 1851, and the Post-office, and *Times* Office, are at present.

FIRE-CLAY RETORTS and PIPES.

FIRE-BRICKS (marked "RAMSAY") OF ALL DESCRIPTIONS.

G. H. RAMSAY, Broad-chare, Newcastle-on-Tyne. Manufactory established in 1804.

MR. G. W. STEVENSON, C.E., F.G.S., Borough Engineer of Halifax, offers his services to Corporations and Companies upon all business connected with public lighting, gas-works, water-works, or town sewerage. He may be consulted either at HALIFAX, or at 26, Parliament Street, WESTMINSTER.

GEORGE ANDERSON, Gas Engineer, 16, ADAM STREET, STRAND.

WANTED, a Gentleman to act as PRIVATE SECRETARY. He must be competent to undertake the charge of Gas account-books, and have an intimate knowledge of decimal arithmetic.

He will be required to travel to different Gas-Works in Great Britain and Ireland. Salary, from £200 to £250. Copies of testimonials to be sent to the above address before the 12th of September. No personal applications.

London, Aug. 25, 1862.

GASHOLDER-TANK, &c., Wanted. Capacity, about 1000 feet. Less will do.

Full particulars to BETA, care of Mr. Kennedy, News-Agent, ROYAL EXCHANGE.

TO GAS ENGINEERS AND OTHERS.

THE Local Board of Health of LAYTON-WITH-WARBRICK are desirous of LETTING their Gas-Works at Blackpool upon lease for seven years from the 7th day of October next.

Terms of letting, with other information, may be had at the office of the board in Blackpool after the 1st day of September next. Sealed Tenders for a lease, with the names of two substantial sureties, will be received not later than the 23rd day of September next, addressed to the Chairman of the Gas Committee, Local Board of Health Office, Blackpool, and endorsed "Tender for Leasing Gas-Works."

The board do not bind themselves to accept the highest, or any Tender.

WILLIAM CHARNLEY,
Clerk to the Board.

Dated Aug. 21, 1862.

COWEN'S PATENT FIRE-CLAY RETORTS.

JOSEPH COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,

Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS RETORTS and OTHER OBJECTS in FIRE-CLAY," and they have also been awarded in the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for "GAS RETORTS, FIRE-BRICKS, &c., for EXCELLENCE of QUALITY."

J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts in the United Kingdom; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire-Bricks, and every other article in Fire-Clay, are promptly executed at their Works as above.

COWEN'S GARESFIELD COALS.
Coal Office,
QUAY SIDE, NEWCASTLE-ON-TYNE.

FIRST PRIZE IN THE PARIS EXHIBITION.

JOHN RUSSELL AND CO.,
THE OLD TUBE WORKS,
CHURCH HILL, WEDNESBURY;
ALMA WORKS,
WALSALL, STAFFORDSHIRE;
and 69, UPPER THAMES STREET, LONDON,
Original Manufacturers of Wrought-Iron Gas Tubes and Holders of the present Patents; Inventors and First Makers of LAP-WELDED FLUES for Steam Boilers.

J. R. and Co. make all kinds of Tubes and Fittings for Gas, Steam, and Water, and the largest Orders may be executed in a few days.

Gun Metal, and all other kinds of Cocks, Stocks, Dies, and Taps, Galvanised Tubes, &c.

N.B. All Goods thoroughly Tested before sent out, and Warranted.

THE Directors of the Stalybridge GAS COMPANY are prepared to receive Tenders for the purchase of the TAR and AMMONIACAL WATER to be made at their works, for a term of one, two, or three years, from the 10th of September, 1862.

Tenders, stating the price per ton offered, and for which term, to be sent to the company's offices, addressed to the Chairman of the Directors, not later than the 6th of September, 1862.

GEORGE TAYLOR, Clerk.

BLAYDON BURN AND LOW BENWELL FIRE CLAY RETORT AND FIRE-BRICK WORKS, NEAR NEWCASTLE-ON-TYNE.

WILLIAM COCHRAN CARR begs most respectfully to thank the Metropolitan, Provincial, and Continental Gas Companies for their patronage for several years past, and to intimate that he has rebuilt and enlarged his extensive premises for the Manufacture of CLAY RETORTS; and that he is now prepared to execute the largest orders with punctuality and despatch. Orders for FIRE-CLAY RETORTS, of all shapes and sizes, FIRE-BRICKS, and all other Articles in Fire-Clay, executed on the shortest notice, and on the most reasonable terms.

London Agents:
JAMES LAWRIE & CO.,
63, OLD BROAD STREET, CITY, LONDON.

Working Setting Six Oval Retorts, Open Court, Class I.

WALCOTT'S
PATENT GAS RETORTS.

Eastern Annexe, Nos. 134 & 387, Class I.,
INTERNATIONAL EXHIBITION.

Drawings of a Working Setting of Six Oval Retorts hung up under covered sunk passage in Class I.

CONSIDERABLE SAVING OF FURNACE FUEL,
With uniform heat all round, and end to end.

Both sides of Patent Retorts being solid, permit either tops or floors of Retorts to be replaced, when worn out, with arch-tiles, whereby they will last from ten to twenty years without rebuilding, when common settings require to be rebuilt every two or three years.

Furnace supplied with heated air to intensify combustion.

Number of Retorts in a setting can be reduced at will, when working or down, so as to heat only two, three, or four, of a setting of six. Furnace can be wholly renewed when burnt out, without disturbing remainder of setting. Suitable setting for sending abroad, as pieces can be easily numbered, so as to be rebuilt. This setting occupies one-third less space than ordinary beds.

The fire playing on covering arch, back, and side-walls in common settings, is by patent mode playing on larger-sized Retorts. The setting is built solidly, and is uninjured by heating up or cooling down.

Inventor—GEO. WALCOTT, Consulting Gas Engineer, London.

Reference given to where working, if required.

Apply to Manufacturers,

JOHN HALL & CO.,
STOURBRIDGE, STAFFORDSHIRE.

INTERNATIONAL EXHIBITION, 1862.

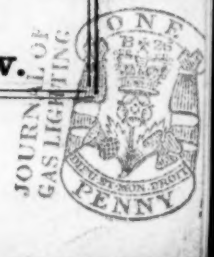
Class 31, Section B, No. 6283.

PRIZE MEDAL
AWARDED TO
BISCHOFF, BROWN, & CO.,
FOR THEIR
PATENT WET GAS-METER,
BEING
"Self-Adjusting, with very little Friction."

MESSRS. BISCHOFF, BROWN, & Co. beg to draw the attention of the Managers of Gas Companies to the improvements made in their PATENT WET METER, which overcomes all the objections hitherto raised to both the Wet and the Dry Meter. It works with the slightest pressure, and does not require any attention or charging with water for from twelve to eighteen months, during the whole of which time the Registration is as accurate as when the Meter was first fixed.

The Advantages of this Meter are illustrated and explained at the EXHIBITION by the aid of one of BISCHOFF, BROWN, and Co.'s EXPERIMENTAL GASHOLDERS and PRESSURE-GAUGES, where Price-Lists and all Particulars can be obtained; or by application at

LANGHAM WORKS,
GEORGE STREET, GREAT PORTLAND STREET, LONDON, W.



INTERNATIONAL EXHIBITION, 1862.

Class X. No. 2265.

THE JURORS HAVE AWARDED TO

JOSEPH COWEN & CO.,

BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,

THE PRIZE MEDAL FOR "GAS RETORTS, FIRE-BRICKS, &c., FOR

EXCELLENCE OF QUALITY."

JOSEPH COWEN & CO. were the only parties to whom a Prize Medal was awarded in the Great Exhibition of 1851 for

"GAS RETORTS AND OTHER OBJECTS IN FIRE-CLAY."

LIVESEY FIRE-CLAY WORKS,

NEAR BLACKBURN, LANCASHIRE.

ORLANDO BROTHERS,

MANUFACTURER OF PATENT CLAY RETORTS,

AND EVERY DESCRIPTION OF

TUBULAR GLAZED SEWERAGE PIPES, BENDS, JUNCTIONS, ETC.

FIRE-BRICKS, TILES, BLOCKS, AND CHIMNEY-TOPS.

SERVIER'S

PATENT

SELF-ACTING GAS GOVERNOR.

This Instrument, which is designed to replace the ordinary Governor,

Operates solely by the Action of the Gas, without any Alteration of Weights, or the Assistance of any intermediate Agency or Apparatus whatever;

And it will maintain a Constantly Uniform Pressure in Gas-Distributing Mains, at any given point of their circuit.

All Applications for Licences to Manufacture or to Use the Apparatus to be made to

Mr. W. H. BENNETT, 42, Parliament Street, Westminster.

WILLIAM & BENJAMIN COWAN,

PATENT WET & DRY GAS-METER MANUFACTURERS,

Buccleuch Street Works, Edinburgh, & 13, Strutt Street, Manchester.

Established 1827.

SOLE MANUFACTURERS OF

ESSON'S PATENT COMPENSATING GAS-METERS;

KAY'S PATENT HYDRAULIC VALVE GAS-METERS;

Also, DRY METERS OF THE MOST APPROVED DESCRIPTION;

All of the above being Stamped under the Provisions of the SALE OF GAS ACT.

W. and B. C. likewise supply ESSON'S PATENT COMPENSATING FOUNTAINS, and KAY'S PATENT HYDRAULIC VALVES, now so extensively used for bringing ordinary Meters within the requirements of the Act of Parliament. Gas Companies can, therefore, either attach the FOUNTAINS or VALVES to their old Meters themselves, or forward them to W. and B. C. for Alteration and Stamping.

GOVERNORS, STATION-METERS, PRESSURE-REGISTERS & GAUGES,

MINUTE-CLOCKS, PHOTOMETERS, EXPERIMENTAL METERS,

AND ALL OTHER DESCRIPTIONS OF GAS APPARATUS.

INTERNATIONAL EXHIBITION,

Class 31 (Sub-Class B), No. 6288.

Messrs. Cowan have been awarded Honourable Mention for Good Work in Meters.

WILLIAM SUGG,

MANUFACTURER OF

PATENT DRY AND WATER GAS-METERS, TEST GASHOLDERS, AND APPARATUS,

"EVANS'S" PHOTOMETERS,

Experimental Meters, Minute Clocks, &c., Station-Meters and Governors,

STREET-LAMP GOVERNORS AND LAVA BURNERS,

19 and 20, MARSHAM STREET, WESTMINSTER.

INTERNATIONAL EXHIBITION, 1862.

TWO PRIZE MEDALS.

Class 13, No. 2973.

PHOTOMETERS, &c.,

Jury Award: PRIZE MEDAL,

For "Photometric Apparatus—for a well-constructed Apparatus to determine the Illuminating Power of Coal-Gas."

(PHILOSOPHICAL INSTRUMENTS, *North Gallery.*)

Class 31, Section B, No. 6350.

METERS, GOVERNORS, &c.,

Jury Award: PRIZE MEDAL,

For "General Excellence of Workmanship, and for his Improvements in Gas-Burners and Photometrical Apparatus."

(*Opposite* AMERICAN DEPARTMENT.)

WILLIAM RICHARDS,

SOLE INVENTOR AND FIRST MANUFACTURER

OF THE

DRY GAS-METER,

Which obtained Prizes at the Exhibitions of London, 1851; New York, 1853; Paris, 1855; and three Prizes at the present Exhibition of 1862.

CRAWFORD PASSAGE, COPPICE ROW, CLERKENWELL, LONDON.

W. RICHARDS invites the attention of Gas Companies and Engineers to the Dry Meter manufactured by him, as possessing advantages over others, by his method of disposing of the flexible material, so that collapsing or bagging of the same is avoided. This defect, so conspicuous in some of the meters of other makers shown at the Exhibition, causes the measurement of the instrument to vary under different circumstances, and the durability of the same is materially impaired.

In the meters manufactured by W. Richards, all the metals of the working parts are incorrodible; the flexible material, the best that can be employed; and, in general construction, they are not to be surpassed.

To those who prefer the Wet Meter, W. Richards submits his patented improvements in the same, which consist in contracting the measuring-wheel at, and near, the water-line—thus allowing of a longer range for the float, and avoiding the sudden extinctions now so common; also, a simple remedy is applied to prevent fraudulent consumption, which the operation of the Sales of Gas Act has so much facilitated.

TELL-TALE EXHAUST AND PRESSURE-INDICATORS;

GOVERNORS, STATION-METERS, &c.

WILLIAM INGHAM AND SONS,

WORTLEY FIRE-BRICK AND RETORT WORKS,

Near

Leeds.

W. INGHAM and SONS, having for many years been extensively engaged in the Manufacture of

RETORTS AND FIRE-BRICKS FROM THE CELEBRATED WORTLEY FIRE-CLAY,

beg to call especial attention to their RETORTS, which have for many seasons proved to be unsurpassed in quality by any in the Kingdom, their FREEDOM FROM CRACKS and the ADHESION OF CARBON rendering them worthy the attention of all parties interested in the making of Gas.

The Works are of such magnitude as to ensure the prompt execution of orders to any extent.

Estimates for Setting, or Bricklayers sent when required.

GAS OVENS IN SEGMENTS OF EQUAL QUALITY.

A large stock of Fire-Bricks, Fire-Clay, Terra Cotta, and Drain-Pipes of all sizes kept in London at CHRISTIE & CO.—Wharf, 64, Bankside, Southwark, where all particulars of Prices, &c., may be obtained.

N.B.—*Export orders continue to have prompt attention.*

ANOTHER

MEDAL AWARDED BY THE JURY, INTERNATIONAL EXHIBITION, 1862,

To THOMAS GLOVER,

SUFFOLK STREET, CLERKENWELL GREEN, LONDON.

THOMAS GLOVER has great pleasure in informing Gas Companies and his other Patrons, that the *Jury of Class XXXI. of the International Exhibition of* 1862 have awarded, for his Patent Dry Gas-Meter, *a Prize Medal.* The reason given for this Award, in the Juries Official Report, is, "*For excellence of manufacture, as regards Dry Meters.*" See Official Report, p. 346.

It is worthy of remark, that the only two other Firms who receive Awards *both manufacture imitations of Thomas Glover's* Patent Dry Gas-Meter, and the reason given for these Awards is "*construction* and sound workmanship." Thomas Glover, therefore, claims that the *construction* of his Meter has obtained *three Awards from the Jury of the International Exhibition of* 1862; at the same time, *contrasting* the Award granted for his Meter by the words, "*For excellence of manufacture, as regards Dry-Meters.*"

The Prize Meter will be found in Class XXXI., No. 6301, connected with a 1-foot holder, to demonstrate that a 50-light Meter *measures and indicates accurately the small quantity of One Foot.*

WILLIAM PARKINSON AND CO.

(SUCCESSORS TO SAMUEL CROSLEY),

PATENT WET AND DRY GAS-METER MANUFACTURERS, &c.

COTTAGE LANE, CITY ROAD, LONDON, E.C.

Established 1816.

PATENT IMPROVED WET METER.

W. P. and Co. invite especial attention to this Meter, which entirely overcomes the difficulty to which ordinary Wet Meters are subjected, owing to the short range of the Float, which is necessary, in order to meet the requirements of the Sale of Gas Act.

"It is well known that in Meters constructed so that the valve will close when the water is drawn off to such a point as to render them 3 per cent. slow the lights are liable to be extinguished by the closing of the valve by a sudden increase of pressure. To meet this difficulty, Mr. Pinchbeck has invented an ingenious and simple arrangement by which the action is reversed, and any such increase of pressure, in his Meter, raises the value instead of depressing it. The fact of the improvement having been adopted by Messrs. W. Parkinson and Co. is a sufficient guarantee that it practically and effectually remedies the inconvenience it is designed to meet."—JOURNAL OF GAS LIGHTING.

PATENT IMPROVED DRY METER,

Which W. P. and Co. pledge themselves to manufacture with the same quality of materials and workmanship as in their Wet Meter, thereby giving Gas Companies and others the advantage of procuring a first-rate Dry as well as a Wet Meter, which, hitherto, they have been unable to do.

STATION-METERS AND GOVERNORS,

Which can be seen at all the London Gas-Works. Also Liverpool, Manchester, Sheffield, Nottingham, Belfast, Glasgow, Birmingham, Dublin, Bristol, Leeds, Leicester, Brighton, Southampton, Sunderland, Wolverhampton, Bradford, Norwich, &c., &c.

TEST GASHOLDERS, EXPERIMENTAL METERS, EXHAUSTER REGULATORS,

MINUTE CLOCKS, PRESSURE GAUGES, PHOTOMETERS, PRESSURE REGISTERS, &c.

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TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion, must be authenticated by the name and address of the writer; not necessarily for publication, but as a guarantee of good faith.

NOTICES.

The subscription is 15s. per annum, if paid in advance during the month of January, or 18s. credit, in two sums of 9s. each, in July and January of each year. Post-Office orders must be made payable at the Charing-Cross Money-Order Office, to William H. Bennett, No. 42, Parliament Street, Westminster.

The next number will be published on Tuesday, September 9, and the subsequent numbers on each successive alternate Tuesday.

Stamped copies, when forwarded by post, must be folded so as to expose the stamp; they are otherwise liable to the full postage charge for letters.

This JOURNAL has been duly registered at the General Post Office for transmission abroad.

All Communications to be addressed to the Editor, No. 42, Parliament Street, Westminster; and orders for Advertisements to the Publisher, Mr. W. B. King, No. 11, Bolt Court, Fleet Street.

THE JOURNAL OF GAS LIGHTING, WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, AUGUST 26, 1862.

Notes upon Passing Events.

THE fire in Great Cumberland Street, by which Mr. Barrett and his two children lost their lives, has drawn public attention to the existing means for extinguishing fires. Scarcely greater excitement was caused by the destructive fires in Tooley Street. One influential daily paper, which is singularly unfortunate in its authoritative essays on engineering subjects, complained, in reference to the Great Cumberland Street fire, that it was not put out, but, "according to the usual precedent in London fires," burned itself out. The illustration was unfortunate; any one passing through the street the day after the fire could see the muslin curtains of the drawing-room absolutely unsinged. In fact, if the unhappy proprietor had only retreated to the drawing-room, he might either have remained there in perfect safety or escaped by the balcony. At the same time it may be taken as a rule, that when once the interior of a building is fully on fire, it is only by exception that water enough can be poured on it to extinguish it; and the art of the firemen is generally and principally directed to saving the buildings, or parts of the buildings, on which the fire has not yet laid firm hold. The general introduction of steam fire-engines will be of great value in extinguishing fires in lofty buildings. The disadvantage of the steam fire-engine is its weight and the time necessarily required for getting up steam. But now that the present chief of the London Brigade has acknowledged his preference for steam-engines, it may be confidently expected that the ingenuity of our mechanics will overcome these objections to the utmost possible extent. It is generally understood that Mr. Braidwood, who brought the London Fire Brigade to so high a degree of efficiency, had a prejudice against the application of steam-power to fire-engines. But the best men have their prejudices, and Mr. Braidwood's even extended to fire-escapes, the inutility of which he used to prove statistically to his own satisfaction, but fortunately without convincing the subscribing public. There are three very obvious means by which the damages of fire might be materially diminished: 1. By a telegraphic communication between all police and fire-engine stations; 2. By providing residences in convenient situations for the water companies turncocks, with arrangements placing them in regular communication with the police and Fire-Brigade; so that, on the occasion of a fire, the turncock might be immediately warned, and enabled to do his duty without the not uncommon loss of time; 3. By authorizing the coroner, or the stipendiary magistrate of the district, to institute an inquiry and authorize a prosecution in every suspicious case of incendiarism. At present, improvements in the fire-extinguishing arrangements of London are checked by the important question, "Who is to pay for them?" The expenses of the Fire-Brigade, paid by the more respectable offices, have reached nearly £25,000 a year, and the Fire-Brigade Committee decline to dip deeper in the joint-stock purse.

The Select Committee of the House of Commons recommended "that a Fire-Brigade be formed, under the superintendence of the Commissioners of Police, on a scheme to be approved by the Secretary of State for the Home Department, to form part of the general establishment of the metropolitan police; and that the Acts requiring parishes to maintain engines be repealed. That the area of the new Fire-Brigade arrangements be confined within the limits of the jurisdiction of the Metropolitan Board of Works, with the option to other parishes to be included, if within the area of the metropolitan police." Of course, this new Fire-Brigade was to be paid by a special rate, estimated at a halfpenny in the pound.

Lord Mayor Cubitt, in his evidence before the Select Committee, sketched out the following scheme, as an amendment on the report adopted by the committee. He proposed a fire-extinguishing force, four times as large as that which now exists, commanded by a person with, in time of need, "powers as despotic as the colonel of a regiment, or the captain of a line-of-battle ship; . . . that he should have the assistance of the police in keeping off the mob, and in preventing depredations; but that the actions of the two forces should be altogether independent, separate, and different; . . . the police being simply charged with the preservation of property—the firemen's duty being to extinguish the fire, in the quickest and most efficient manner;" the commanding officer of the Fire-Brigade being only responsible for what he did, while putting out fires, to the Secretary of State. But the Lord Mayor also proposed that there should be a separate body—a commission, with a paid chairman, a paid secretary, and twelve, fifteen, or twenty honorary commissioners, including the representatives of the fire-insurance companies who now contribute, and who, under this scheme, are to continue to contribute £25,000 a year, to manage the business, now managed by the representatives of the fire-assurance offices. The total expense, Mr. Cubitt puts at some £100,000 a year; and for that, he expected a regiment of 400 or 500 men, regularly officered; so that the command at every fire should be taken up by the officer of highest rank present. To raise the £100,000, he proposed to take from the Chancellor of the Exchequer 15 per cent. of the fire-insurance duty, and to raise the rest by a sort of salvage assessment on the property saved from fire. The present number of the Fire-Brigade is 127, and the exact cost for the year 1861 was £24,332. 3s. 11d., which was divided amongst twenty-eight offices. The offices receive for premises or property insured in London, about £350,000 a year. The offices who keep up the Fire-Brigade represent £266,000,000 of insured property; and the offices not contributing, about £15,000,000. On the 21st of February,

1862, Mr. Brown, the honorary secretary of the London Brigade, gave the Home Secretary formal notice that the associated companies would, at an early day, relinquish the maintenance of the Fire-Brigade.

The third plan, although it can scarcely be called a plan, so cautious was the author in his manner of suggesting it, is to be found in the evidence of Mr. John Drummond, managing director of the Sun, and chairman of the committee for managing the Fire-Brigade. Mr. Drummond suggested that if the Government or metropolitan public would subscribe a rate themselves to the extent of £10,000 a year, the Fire-Brigade Committee would be willing to continue, and enlarge their present establishment; to establish ten new stations, each of them costing from £700 to £800 a year, and, in other ways, to increase the efficiency of their fire-extinguishing arrangements.

After much consideration, we have come to the conclusion that in some such scheme the best solution of the difficulty involved in extending and maintaining the Fire-Brigade may be found. The Lord Mayor's plan involves first the creation of a board, with neither special knowledge, nor special interest in the art of extinguishing fires, a board to be created for no other reason than because it would be a compromise between the Corporation of London and the Metropolitan Board of Works; and, next, the extraction of money from the Chancellor of the Exchequer! The most intelligent board that could be selected, would have to learn the whole business of fire-extinguishing, and probably fall under the dominion of some shallow, fluent, or jobbing attorney. The scheme of the Select Committee proposes transferring one more important duty to the police, who have already so much to do that they are obliged to neglect their proper business—the protection of life and property. We have it in evidence that you cannot make a fireman of a policeman as long as he remains a policeman. The two callings are incompatible. A fireman's duties require special training and skill, which only experience can give. As the Fire-Brigades wages would be higher than those of the ordinary police, there would be a tendency on the part of the chief of the police department to make promotion to the brigade a reward for good conduct. Now, a man may make a very good policeman or soldier, and a very bad fireman. Self-reliant intelligence is required in a fireman—qualities not cultivated by military and police discipline. The fire assurance offices complain that in those towns where fire-extinguishing is one of the duties of the police, there is a great and needless sacrifice of property from well-meant, ignorant zeal. There might be some reason for placing a Fire-Brigade under the command of the chief of the Police, if we had to deal with a town just entering on new municipal arrangements. As it is, not only has our chief policeman, Sir Richard Mayne, enough to do, but he is notoriously quite ignorant of fire-extinguishing arts. Yet, if the chief of the Fire-Brigade were placed under him, he would be more than human if he did not exercise some authority, and, perhaps, at a most inopportune moment. The fire-assurance offices have the greatest possible interest in saving property from destruction by fire, or the water of fire-engines. The committee, composed of the representatives of the principal offices, have a fund of experience, an experienced staff, and have arrived at the wholesome habit of paying many thousands a year for a duty which in other cities is one of the municipal charges. If the Act compelling parishes to keep up a fire-engine be repealed, and a contribution, regulated by Act of Parliament, be obtained from each parish, equal, for the present, to about £10,000 a year, to be added to the £25,000 now expended by the Fire-Brigade Committee, under some settled regulations for annual publication of a report and balance-sheet, &c., the metropolis would obtain very efficient fire-extinguishing arrangements at one-sixth of the cost of either of the other schemes; for, while the companies would obtain the money assistance they require, they would be brought under the influence of public opinion. The system of charging a salvage-rate on uninsured property saved from fire by the effects of the Fire-Brigade, might also be advantageously introduced into the metropolis. This combination of public assistance and volunteer management would be quite in harmony with the genius of our institutions.

Mr. George R. Burnell has recently published, under the title of "The Annual Retrospect of Engineering and Architecture," an extremely useful little volume, devoted to the year 1861, in which is collected and condensed a vast amount of practical information as to foreign and colonial, as well as British, public works and inventions. The book is arranged under divisions, viz.: Civil Engineering—Architecture—Military Engineering—Naval Engineering—Steam-Engines and Propellers. Under Civil Engineering are included sections on Railways and Roads; Harbours, Docks, and Canals; Gas, Water Supply, and Sewerage; Mechanical Engineering; Telegraphic Engineering; Mining and Metallurgy. Under Architecture—New Materials, and New Processes. Under Military Engineering—Fortification, Weapons, and Projectiles. Under Naval Engineering—Lighthouses; Channel Ports; Captain Cole's Cupola Ships; and an essay on the Strength of Iron Ships. The following are a few amongst the many interesting facts and figures collected by Mr. Burnell which will bear quoting:—Up to the end of April, 1861, nearly 35 millions sterling had been expended on Indian railroads, and about 1400 miles had been opened for traffic. The cost of construction seems to have ranged between £18,200 and £7000 per mile; and hitherto the lines opened seem to have been worked at a satisfactory profit. The bridges and viaducts on the banks of rivers have been very expensive, in consequence of the difficulties in the way of foundations, caused by the enormous thickness of alluvial deposits. Thus, on the Bombay and Baroda line, which is only about 313 miles long, there are to be no less than 82 bridges, containing 465 spans of 60 feet clear opening each. The expenses of this line will be unnecessarily increased by the plans of the engineer, Colonel Kennedy, who has taken up a crotchets of easy gradients obtained at vast expense, which has already cost the Great Western shareholders very dear. Of the advantage of a reasonable *détour* to obtain easy gradients, there can be no doubt; but costly tunnels, cuttings, and viaducts, executed in order to do great feats with a single engine, do not pay. That point has long been settled amongst English engineers of real experience. The length of railways in course of execution in India amounts to 4,144 miles; the estimated capital exceeds fifty millions. Irrigation, wisely planned and executed, will do as much for India as railways. The one creates the produce which the other is destined to carry. But it is not without fear and trembling that we contemplate the public works of India, under the control of such a busy and sufficient administrator as Sir Charles Wood. Fifteen millions sterling have been laid out upon irrigation works in the Madras Presidency, and all that the Secretary of State for India has allowed for annual repairs has been £75,000, or just one half per cent. Mr. Burnell observes, "That the best house property in London requires an average outlay of 1 per cent. per annum for landlords repairs; therefore, an outlay of half per cent. on the maintenance of irrigation works, is simply an excuse for allowing them to fall to ruin." The great Ganges Canal Works, executed by the Government, have not yet been as useful and profitable as they may be, for want of the branch channels, which will open up what may be termed the retail trade of irrigation. Irrigation works are now being carried out by the Madras Irrigation and Canal Company, and by the East India Irrigation and Canal Company. The guaranteed capital of the Madras Company is a million sterling, and the schemes contemplate irrigating of upwards of 760,000 acres. The main channel will be 170 miles long, and it is calculated that not less than ten million souls will be benefited by cheap intercommunication and facilities for irrigation. In this, as in many other schemes for public works in India, much, if not everything, will depend on the intelligence and disposition of the local governing powers. In his chapter on canals, Mr. Burnell suggests, that the proprietors of the almost abandoned Basingstoke Canal might obtain some profit from offering their waters for irrigation purposes to the neighbouring farmers. It seems that the Belgian Government have lately carried a canal, for the double purpose of irrigation and traffic, through the sandy district of the Campine. He would also improve the Basingstoke canal, and connect it with the Winchester and Southampton, so as to provide water-carriage between London, Southampton, and Portsmouth, for the conveyance of heavy military munitions and stores. The small dimensions of most of our canals are an obstacle to the introduction of steam-power to any material extent. On the river Seine, between Paris and Rouen, the idea of the floating bridges, designed by the late Mr. Rendel for the Hamoaze, has been worked out in a very ingenious manner. "A strong chain-cable has been laid down loosely upon the axis of the navigable channel, following all the windings of the Seine.

Steam tug-boats are provided, carrying engines of 150 or 200-horse power, working at high pressure, upon the same principle as the locomotive engine. The boats bear fore and aft guide-pulleys, susceptible of being moved by the same machinery as the rudder, which take up the slack of the cable, and lead it to a drum-wheel, round which it passes a sufficient number of times to produce an efficient resistance to the action of the engine, and thus propel the boat without either wheels or screw working on the water. The barges to be towed follow at a short distance behind, or are lashed to the side of the steam-tugs; and in this way trains of six, eight, or ten barges, of 240 tons each, descend the Seine at the rate of six miles an hour, or remount it at the rate of four miles an hour, at a cost considerably less than what was formerly paid for horse-traction."

The arrangements of the International Exhibition—the division of space, the selection of the juries, the system of awarding medals, the exclusion of the twenty-five thousand exhibitors on the opening day, the omission of the representatives of foreign nations from the procession on that day—have given rise to a series of charges against the English people by French writers; charges which, with the exception of the last, have the least possible foundation. We have been accused of perfidiousness, pride, inhospitality, Machiavelialsm, selfishness; and, in fact, told that our grandest actions have been based on the lowest motives. It is true that, as the Exhibition has proceeded, these attacks have become more faint; and the higher class of journals, like the *Presse Scientifique*, the *Journal des Débats*, and the *Revue des Deux Mondes*, have acknowledged in handsome terms that foreigners have been not only fairly but liberally treated. M. Esquiros even flatters too much; while M. Barral declares himself satisfied with the behaviour of juries against whose composition he protested.

Nothing has astonished intelligent foreigners more than the palpable evidence of our colonizing powers displayed in the International Exhibition. Our colonies could never have thriven on French principles. As an example, during the construction of this Algerian railway, every material, every machine, used by the contractors has been taxed at the highest possible rate. The strictest rules of the custom-house have been applied to small quantities of English luxuries and articles of domestic use imported by the railway officials for their own personal consumption. And the steamers, the property of the contractors engaged in bringing the needful railway plant, were all subjected to the heavy port dues by which shipping is supposed to be protected; the real effect being to exclude tens of thousands of tons of trade from the ports of Algeria. M. Barral's two last reports on the International Exhibition are decidedly complimentary. He remarks that, on the day of the announcement of the prizes, the line of the procession was kept "not, as it certainly would have been in France, by a double line of soldiers, but rows of ladies in full dress;" and, "although there were at least eighty thousand people there, a few policemen were able to keep perfect order, no one," he observes, "in this country thinking of breaking a rule when once it has been duly advertised in the newspapers." M. Barral mentions that France has been adjudged superior to England in six classes—viz., food, musical instruments, silk, printing and dyeing, articles of dress, and jewellers and goldsmiths work. Although our pianos are better than the French, as our tailors were excluded from the Exhibition, there can be little doubt that the juries came to correct conclusions. M. Barral also claims another class lost, because artistic bronze was mixed up with hardware. The French produce admirable and also abominable bronzes; we have only one great manufacturer—Elkington. As for English jewellery, if you meet with an article in good taste, the designer is nearly always a Frenchman or German. M. Barral claims a superiority for France in glass. This cannot be allowed. English glass, whether for table use or in chandelier ornaments, is far superior to the average produce sold in French shops. France, as we prophesied, has every reason to be satisfied with the result of the International Exhibition,—the sales of Parisian tradesmen have been enormous. Some French writers have sneered at the pyramid of gilded canvas, stretched on a wooden frame, representing the mass of gold extracted from the diggings of Australian Victoria. M. Barral is wiser; he quotes the inscription on the pyramid, giving the population, 177 in 1836, and 540,332 in 1861—the extent of land sold and cultivated—the capital expended on roads, bridges, buildings, and public works—the revenue—the amount of exportation and importations—and says the English are proud of this trophy, and with reason, because it proves the colonizing capabilities of the British people, and explains the influence their empire exercises in the world. The contrast between this colony of Victoria and Algeria is, M. Barral observes, overwhelming, "when we consider the difficulty we have had in producing a small increase in the indigenous population of Algeria—the enormous sums we have expended, not in public productive works, but in maintaining an army—the small revenues—the insignificant produce of the soil." If M. Barral takes the trouble to read our account of the railway festival at Algiers, he will receive at least a hint why colonization does not prosper under French administration.

As this JOURNAL is extensively read and often quoted on the Continent, we venture to call the attention of our French friends, and especially of the "*Cercle de la Presse Scientifique*," to a recent festival in Algiers, the management of which certainly did not support those pretensions to superior liberality, magnanimity, and *grandeur d'ame*, which certain French writers are in the habit of claiming for their country. For many years past, the French Government have been anxious to develop Algeria by railways. Marshal Randon tried to rival Roman works, and projected a railway, to be executed by his army; but the project never went much further than an idea. After many vain attempts, the well-known English contractors, Messrs. Peto and Betts, undertook the task. They employed eminent and experienced engineers to survey the country; they found a large share of the capital; and, finally, with English engineers, mechanics, and machinery, they made the first Algerian railway, and, what is more, did what no Frenchman ever did, punctually completed the works on the day fixed—a great point with the authorities, for they were anxious that the *fête*-day of Napoleon in 1862 should be permanently recorded by the opening of the first Algerian railway. Accordingly, a great festival was organized in that admirable manner which the French so well understand. In picturesqueness, in flags, banners, garlands, music, and military display, nothing was wanting. A dignitary of the Church, in resplendent robes, blessed the engine in due form, and at the same time blessed the Emperor, and put in a good word for every one in authority. A banquet followed, over which, of course, our old fat friend, Pelissier, Duke of Malakoff, presided, and all the notabilities of the province; the invitations to the English, connected with the railway, were confined to Mr. Curry, the resident engineer, and one other gentleman, who appeared as the representative of the contractors. When the time for speeches arrived, the Emperor, the Duke of Malakoff, the Mayor of Blidah, Marshal Randon and his soldiers who did not make a railway, and M. Rostand, the vice-president of the French company, which is about to take up and work the railway made by English engineers and contractors, exchanged compliments in that warm and glowing style peculiar to the Latin race. The Emperor received tributes for his grand idea, which would not have been overcharged if, instead of ordering, he had invented railways. The marshal was so charmed with his share of the business that he positively wept in returning thanks; while Rostand, whose company had no more to do with planning, surveying, executing, or finding the money for the railways than any stoker on the line, according to the *Moniteur d'Algerie*, declared that "his company was happy and proud to have lent its co-operation to the realization of so great an idea, that the sympathy of the population was a precious compensation to them for the difficulties they had encountered in the outset;" and he said, the kindness with which the Administration had supported their perseverance in "*la construction de la ligne que nous venons de parcourir*," had made the duty of the (retail) company to lose no time *in studying* the best course for the line in the provinces of Oran and Constantine, the construction of which had been confided to them. He then expatiated on the glorious rights of citizenship which his company had acquired by planting its banner on the African soil—that is to say, by leasing a ready-made railway. With a toast to the success of the railway, the ceremonial part of the banquet ended, not only without the usual compliments to the contractors and engineers, but without the slightest reference, from the beginning to the end, to the British skill and capital which had alone completed the work, the importance of which the French guests were engaged in glorifying. To make this new edition of the bird in borrowed plumes complete, we must add,

that one of the speakers or minor officials expressed to an English gentlemen his regret that it was impossible to make any allusion to the *share* Sir Morton Peto and Mr. Curry had had in the work, but "the fact was, that the feelings of the people would not permit it"—like the Irish gentleman of olden days, who looked with contempt on every kind of occupation, but did not disdain to borrow money from, and run in debt for goods to any one. We shall wait with some curiosity to see whether the discursive debaters of the *Cercle de la Presse Scientifique* will take any notice of this illustrative incident of French colonization.

Circular to Gas Companies.

The Acts of Parliament relating to gas lighting passed during the session of 1862, have, with the exception of the Aberdeen Police, Water, &c., Act, just been printed. They are few in number, and of less than the usual importance; the gas legislation of the present year being remarkable only for the exhibition of weakness by the Reading companies, in ignobly succumbing, after much unnecessary bluster, to the unreasonable demands of the Local Board of Health, for the sake of obtaining the assent of the board to their amalgamation. A brief notice of the prominent features of the case may serve as a warning to gas companies who seek to propitiate local authorities by yielding to unjust demands; and also to discontented consumers who look to competition as a remedy for their fancied grievances.

A controversy having arisen between the local authority of Reading, and the two gas companies of that town, respecting the terms of public lighting, a draft of a contract was prepared by the board, with the aid of Mr. S. Hughes, to which the consent of the company was required; and, among several other monstrous requirements, it was proposed to refer to arbitration the determination of the price per 1000 feet at which gas should be supplied in Reading to private consumers, as well as to the public lamps, "the calculation to be based on 7 per cent., on a properly-expended capital," the companies being at the time entitled to receive dividends of 10 per cent. The local board urged as reasons for these demands—and we quote their reasons with great satisfaction, as strongly confirming our views of the usual results of competition—that one of the Reading gas companies, having "obtained its parliamentary powers on the express ground of competition with the other company, yet, in disregard of this, the very condition of its existence, this company entered into a combination with its rival, thus establishing a monopoly of the worst description;" in consequence of which, the price of gas was fixed "with reference to the amount of profit which must be obtained in order to pay handsome dividends on an unnaturally exaggerated capital, and, at the same time, to maintain, at the public expense, the costly extravagance of two separate works, and two distinct companies, with their double staff of directors, officers, and other expensive appendages." The gas companies, when called on to resign the privileges conferred on them by Parliament, and to place themselves under subjection to the local board, refused at first to obey the summons, however, when about to come before Parliament to procure an Act for amalgamation, they entered into a compromise with the board, by which they sacrificed all they had been contending for, and they have formed a precedent that may be referred to in subsequent legislation, greatly to the detriment of gas companies. The Act they have obtained under these circumstances, contains the following provisions: That the capital of the amalgamated company shall be £40,000, consisting of £20,000 old capital, on which not more than 8 per cent. dividend is to be paid; £5000 of invested profits, bearing a dividend not exceeding 5 per cent.; and the new capital of £15,000, to be created under the Act, is to bear a dividend not exceeding 7 per cent. It is further enacted, that if a larger dividend be at any time necessary to make up the deficiency of any previous dividend at the prescribed rates, the making up of such deficiency shall be limited to two years from the period at which it occurred. When the whole of the new capital is raised by the issue of shares, the further sum of £10,000 may be borrowed. The company are bound to provide and maintain all main and service-pipes, which must be constructed of the best materials, and so as not to suffer any interruption to the proper supply of gas; they are bound to erect and fix all such lamps, lamp-posts, &c., as the local board provide; and, at the request of the board, they are to remove or alter the situation of the lamps, which they are to furnish with service-pipes, stop-cocks, and all other apparatus, *except burners*. The local board are empowered to light and extinguish the lamps, but they may contract with the company, or with any other persons to do so. The company are not compelled to supply gas to lamps placed more than 80 yards apart; but, in case of wilfully failing to supply other lamps, they are liable, on a summary conviction before two justices, who may be members of the board, to forfeit to the local authority £20 for each offence, and a further penalty of £5 for every day during which the offence continues. All private consumers may demand to be supplied with gas at a distance of 50 yards from the main, provided they contract for not less than two years to pay gas-rates equal to 10 per cent on the outlay of the company; and the latter may demand security for the payment of the gas-rate before laying down the service-pipes. The following is the clause fixing the maximum prices at which gas is to be supplied to different classes of consumers:—

> The highest charge of the company for gas supplied by them shall not, at any time, exceed the rate of six shillings and sixpence for 1000 cubic feet; provided that the charges for gas supplied by them, *within the borough of Reading*, shall not, at any time, exceed the following rates per 1000 feet; that is to say:—
>
> | | |
> |---|---|
> | To consumers of less than 10,000 cubic feet, half yearly . . . . | 5s. 0d. |
> | To consumers of 10,000, but less than 20,000 cubic feet, half yearly | 4 9 |
> | To consumers of 20,000, but less than 40,000 cubic feet, half yearly | 4 6 |
> | To consumers of 40,000 cubic feet or upwards half yearly . . . | 4 3 |
> | For gas supplied to public lamps . . . . . | 3 7 |

The clause relating to the illuminating power and the purity of the gas is copied from the Metropolis Gas Act, the illuminating power being fixed at 12 sperm candles. The provisions for testing the quality of the gas are similar to those of most other gas Acts. There is some mystification about the following clause—the 93rd—providing for keeping the mains constantly charged with gas, that we do not profess to comprehend: "The company, unless prevented by necessary repairs or unavoidable accidents, shall at all times keep all their main-pipes, and branch communication, and service-pipes, fully charged with gas at a sufficient pressure; *and the stop-cocks shall be so made and turned as not to prevent the branch or service-pipes being at all times so charged.*" The gas supplied to the public lamps is to be consumed by meter or otherwise, at the option of the local board; and, when meters are employed, they are to be provided at the cost of the board, "but the company shall not at any time require that meters be affixed to more than one lamp in every twelve lamps then supplied with gas under this Act." The company are to furnish meters to private consumers rent free in all cases where the consumption exceeds 2000 feet in the half year; and, when meter-rents are chargeable, they are not to be charged more than 15 per cent. on the outlay of the company. The provision of the Metropolis Gas Act, protecting an incoming tenant from being charged the arrears left unpaid by the former tenant, is introduced; but power is given to the company, when the supply of gas is discontinued, to enter the premises, after giving twenty-four hours notice, to remove the meter and fittings. As a *finale* to the concessions made by the company to the local authority, it is provided by the 116th clause that, whenever the board "deem it necessary to require the company to raise, sink, or otherwise alter the situation of any of the mains, pipes, stop-cocks, plugs, syphons, or branches, laid down for the purposes of this Act, the company shall, at their own expense," alter the same, "in such places and in such manner as the local board shall think right and proper;" and, in default, the board, or any person acting under their authority, may do the work required, and obtain payment of their expenses from the company; the amount to be levied by distress if payment be refused.

The foregoing outline of the principal clauses of the Act will show how the amalgamated gas company of Reading have allowed themselves to be bound hand and foot by the board of health of that town. The sacrifice of 2 per cent. of the dividends allowed by the Gas-Works Clauses Act; the limitation of the time for making up deficiencies to two years; the power given to the local board to provide the burners for the public lamps, and to light them; the reduction of the price of gas supplied to the street-lamps to 8d. per 1000 feet less than is charged to the largest private consumer; the quantity supplied to be measured, at the option of the local board, by meters placed to one lamp in twelve; the furnishing of meters to the majority of private consumers rent free; the compulsion

to alter the position of any mains or pipes, at the pleasure of the board, at the company's expense, are conditions which we should have thought no gas companies would have submitted to, merely to conciliate the favour of the local authority, and to prevent opposition to their amalgamation. Had they boldly met the threatened opposition, they would have obtained their Act without subjecting themselves to such injurious and humiliating conditions. No parliamentary committee, we feel assured, would have sanctioned the imposition of such terms on the companies by the local authority; and, if the attention of Parliament had been directed to the unjust provisions contained in the Act, it would not have been allowed to pass in its present form. As it is, the amalgamated gas company of Reading are placed at the mercy of the local board, who may, in a short time, so exercise their power as to induce the company to escape from such a state of bondage, by selling their works for half their value.

The principal object of the Leeds New Gas Company's Act is to enable the company to raise £65,000 in addition to their former capital of £130,000, and to give them further borrowing power to the amount of £16,000. The company are also empowered to extend their limits for supplying gas to the adjoining township of Roundhay. The standard of illuminating power is 16 sperm candles, but no reference is made in the Act to the purity of the gas.

The Heckmondwike Gas Act incorporates the company, which was formed in 1844, grants them power to light the adjoining township of Liversedge, and to increase their capital. The share capital of the company was £7000, and the vested profits have raised it to £10,500. The Act empowers the company to capitalize the vested profits, by creating new shares of £5 each, the dividends on which are limited to 4 per cent.; and to raise a further sum of £10,500 by the creation of new shares, on which the dividend is limited to 7 per cent. The maximum price of gas is to be 4s. 6d. per 1000 feet, and the illuminating power 12 sperm candles, "unless prevented by unavoidable cause or accident." The testing clauses mention the purity as well as the illuminating power of the gas, but no standard of purity is given.

The Stretford Gas Act is also an Act of Incorporation, the company having been registered in 1856, under the provisions of the Joint Stock Companies Act. The capital of the company is to be £39,000, of which amount £15,000 is old capital, and the remainder is to be made up, in the first instance, by the creation of 1000 £5 preference shares, bearing interest at 6 per cent., and, subsequently, by the issue, from time to time, of new £5 shares, the dividends on which are limited to 7½ per cent. The limit of the price of gas within the townships of Stretford and Sale is 5s. per 1000 feet, and beyond those townships 5s. 6d., and the company are bound to supply gas to the public lamps at prices not exceeding those rates. The illuminating standard is 14 sperm candles, and it is provided that the gas "shall as far as possible be free from sulphuretted hydrogen, and other compounds deteriorating its purity." The testing-clauses are of the usual character.

The Bollington Improvement and Lighting Act empowers the local board to construct works for lighting that township with gas. All service-pipes are to be provided by the local authority, at the expense of the consumers. The price of gas is limited to 6s. per 1000 feet for 18 sperm-candle gas. Arrangements are to be made for testing the illuminating power of the gas, but nothing is said about its purity. The local board are authorized to levy a special lighting-rate, to be assessed only on houses within three hundred yards of some public light. The gas-rates are to be applied in the first place to the payment of all charges consequent on carrying the Act into execution, and, lastly, to "the reduction of the gas-rents and lighting-rates, or in aid or reduction of the general district-rates, or for such of those purposes as the local board shall from time to time order and direct."

The object of the Windermere District Gas Act is to establish a new company, with parliamentary powers for lighting certain small townships in that district. The capital of the company is to be £10,000, with power to borrow £2,500. The price of the gas supplied is limited to 7s. per 1000 feet, and the illuminating power is fixed at 16 sperm candles. The meters may be provided by the consumers or by the company, who are authorized to charge meter-rent. No provision is made for public lighting.

The Aberdeen Police, Water, &c., Act, which is not yet printed, gives power to the town council to purchase the gas-works of the existing company.

Our comments on the inconsistency of the conclusion drawn by Mr. Rutter from his own powerful arguments against charging less for gas supplied to public lamps than to private consumers, has called forth a letter from that gentleman, which can scarcely be considered a reply or a justification. He directs his attention almost exclusively to the question of supply by meter, and he endeavours to distort the opinion we expressed, that the only equitable system of supply is by a meter fixed to each lamp, into an admission that a meter fixed to one lamp in twelve is an equitable means of measuring the quantity consumed. The two things are entirely different. In the one case, the actual quantity consumed by each lamp is measured; in the other case, a mere estimate is formed, which may be, under any circumstances, extremely fallacious, and which might be purposely made so. We have, on previous occasions, advocated the supply by meter; but we have always strongly opposed the proposition to estimate the average consumption by a few selected lamps. Even with the best intentions, we believe it to be practically impossible to calculate fairly the quantity consumed by unmetered lamps in comparison with those to which meters are attached. Allowing that the flames of two such lamps were accurately adjusted alike, the variation of pressure during the night would affect the metered lamp more than the lamp in which the gas passed directly to the burner from the service-pipe. Let meters, introduced in suitable lamp-posts to receive them, be provided by the local authorities for each public light, and then all disputes about the matter would end, to the satisfaction, and we believe to the profit of the gas companies. Mr. Hughes's plan of hanging the meters to the present lamp-irons is absurd; for, independently of the accidental injuries to which they would be exposed, they would present inviting targets to mischievous boys, against which to practise the art of throwing stones; and thieves would be constantly tempted to carry off the meters for the value of the metal. We are surprised that a practical man like Mr. Rutter should conceive the Utopian notion that public authorities and gas companies might be induced to throw aside all personal interests, and unite together in pursuing the philosophical investigation of determining the average quantity of gas consumed as a scientific experiment, without regard to their opposing interests. By bringing prominently forward the supply of gas to public lamps by meter, Mr. Rutter attempts to throw into shade the main question of what he calls "our little differences about the prices to be charged for gas to public lamps," as a matter "not of much importance." That, however, involves a question of principle, while the other is a matter of practice; and we should like to hear by what process of ratiocination Mr. Rutter can deduce from his own arguments, which convincingly prove to others that the prices charged to local authorities ought not to be less than to private consumers, the opposite conclusion. He promises another letter, in which he may possibly explain the flagrant inconsistency.

The right of a gas company to fix a meter in the ground, under a public footpath, and to make provision for obtaining access to it by a trap-door, is now in a fair way of being tested; for the highway board of Sheffield have carried into effect the resolution alluded to in our last—of filling up the space under the footpath in which the Sheffield Gas Company had deposited a meter. The meter so placed was intended to act as a check upon one fixed by the board to measure the quantity of gas supplied to those offices; but it now lies underground, buried alive as it were, registering the gas passed through it, though a large flagstone is laid above to prevent the gas company from being benefited by its indications. The misunderstanding between the highway board and the gas company has, at various times, assumed different phases; and, as each of them is of considerable interest to gas companies, a brief recapitulation of the principal facts may be acceptable. It will be remembered that the gas company, in the first instance, refused to supply the board with gas, through a duly-stamped meter which the latter had provided, until it was taken to these works and tested by their own officer. We believe the principal motive assigned for this unusual refusal was, that the meter, although it bore a badge indicating that it was a 15-light meter, and capable of passing 75 cubic feet per hour, was really only such a meter as the old-established meter manufacturers call a 10-light meter, and which they stamp as capable of passing 60 cubic feet per hour.

The inspector, however, certified that it would pass the 75 feet per hour with 5-10ths pressure, and that the per-centage of error was within the limits allowed by the Sale of Gas Act. When the question was argued before the magistrates, they decided in favour of the board, and the gas company promised to supply the gas; but, as a check on the meter, the accuracy of which they disputed when working under a greater pressure than 5-10ths of an inch of water, they determined to use a second, which they placed in a receptacle in the ground, covering it with a wooden flap, secured by lock and key. It is alleged that this meter was fixed surreptitiously in the night time, and at an unlawful hour for breaking up the footpath; and the board resolved, in the first instance, to summon the gas company before the magistrates for an infringement of the Highway Act, but they were afterwards advised to cover up the meter with earth, to prevent access to it, and that they have done. The matter rests in that position at present, but we presume the gas company will not allow their meter to make its registrations in vain, and that, when they want to inspect the index, they will dig down to it, and the board will be unable to prevent them. It is lamentable to perceive two public bodies making themselves thus ridiculous by their senseless animosities. If they possessed a particle of the philosophical spirit which Mr. Rutter supposes to animate gas companies and local authorities in general, they would see the folly of such petty displays of antagonism, and endeavour to settle their disputes in an equitable and rational manner.

The judgment of the Court of Exchequer Chamber, in the case of *Bamford v. Turnley*—a report of which will be found in another column—overrules the case of *Hole v. Barlow*, which has for some years been followed in the application of the law of nuisance, and we cannot help thinking that the effect of this judgment will be greatly to increase litigation, and so create the very evil which one of the learned judges deplores as having resulted from the ruling in *Hole v. Barlow*. It appears to us, from the report of the judgment, that the exigencies of society in the present day were not sufficiently taken into consideration. Take, for instance, the very nuisance there complained of—the burning of bricks. It is quite clear that as population increases new houses must be built; and, to enable them to be built, bricks must be made somewhere, and the question now is, where? A hundred and fifty, or a hundred years ago, no doubt sites could be found where trades causing the most intolerable nuisances might be carried on without detriment to any one; but our country has much changed since then, and now there is scarcely a spot in England where even such a trade as brick-burning could be carried on without being a nuisance to some one. Is it, therefore, to be said that there shall be no more bricks burned, or only at the penalty of compensating every man who can make out a case of nuisance caused to him by the vapours emitted from the burning clamps? Of course, there are many trades more offensive than brick-burning, but yet as necessary; for instance, the melting of tallow, bone-boiling, or a tan-house. Nothing can be more disgusting than the smells which proceed from the premises occupied by persons carrying on these trades, yet their products are absolutely necessary. We must have shoes and candles, and it is obvious that a man carrying on either of these trades ought not thereby to be continually involved in litigation. The decision in *Hole v. Barlow* was formerly his protection against this. If he could prove that his trade was a lawful and necessary one, was carried on in a reasonable and proper manner, in a convenient spot, and so as to create the least possible annoyance to his neighbour, no action would lie against him; but the present decision would seem to have placed every manufacturer whose business can be considered a nuisance at the mercy, so to speak, of all within the influence of such nuisance. In the judgment of the majority of the judges in *Bamford v. Turnley*, a distinction is made between nuisance and annoyance, which will give rise to much ingenious subtlety and hair-splitting. It is said that a man may, without being liable to an action, exercise a lawful trade in such a manner as to be an annoyance to his neighbour, so that it does not cause what, in point of law, amounts to a nuisance. It is difficult to say where the line will be drawn; what is merely an annoyance to one man, may be an insufferable nuisance to another. That may be a nuisance at the west end of London, which is none at the east. The learned chief baron seems to have taken a very common-sense, and, at the same time, broad and comprehensive view of the laws affecting nuisances, and, waiving the question as to whether the passage in Comyn's Digest is supported by authority or not, appears to have considered the question with reference to the ordinary contingencies and requirements of civilized life. It had been previously observed, that the ruling in *Hole v. Barlow* was too vague, and the words "reasonable" and "convenient" had been commented upon; and the Lord Chief Baron observes, that the nuisance for which an action would lie is not capable of exact legal definition applicable to every case, but must depend upon all the surrounding circumstances; or, as he very pertinently puts it, that may be a nuisance in Grosvenor Square which is none in Smithfield Market. If this be not admitted, what is to become of our large manufacturing towns, such as Sheffield, Birmingham, Wolverhampton, Manchester, &c.? Here are congregated many trades undoubtedly causing nuisances. Is every man carrying on one of such trades to be liable to an action by any or all of his surrounding neighbours? It is true he might compensate them, as suggested by Mr. Baron Bramwell, but where is it to end? And, if he does compensate, he must consider it one of his manufacturing expenses, and must make the public in some manner pay for it; therefore, it certainly would have seemed better, as in *Hole v. Barlow*, to leave it to the jury to say if the defendant had carried on his trade in a reasonable manner, and in a proper and convenient spot, using the words "reasonable" and "convenient" in their ordinary and well-understood sense. We await, with considerable apprehension, the effect of the deliberate ruling of such men as Chief Justice Erle upon the manufacturing interests of this country, and we trust that steps have been taken to secure its review by the House of Lords.

Correspondence.

SUPPLY OF GAS TO PUBLIC LAMPS.

"The only equitable system of supply is by meters (a meter) fixed to each lamp."—JOURNAL OF GAS LIGHTING, August 12, 1862, p. 516.

SIR,—By quoting your own words, at the head of this letter, I wish you to understand that I attach importance to them. After waiting so many years, it is encouraging to have your help and co-operation. Our little differences about the prices to be charged for gas to public lamps is not of much consequence. Now that we agree as to the proper means of supply, the other parts of the arrangements may be left to adjust themselves. All will come right. I have never doubted the power and influence of common sense and right principles; and, although the several parts of an improved system may be a long time in fitting themselves together, the issue is certain, and the effects will be satisfactory.

Let it not be supposed that the supply of gas to public lamps is a matter easily to be disposed of. The work, in real earnest, has only just begun. Still—having begun at the right end, the prospect is cheering. We must not be in a hurry. Whenever gas is talked about at commissioners', town council, and vestry meetings, see how the discordant elements break forth! These will not be easily, nor quickly, allayed. But there are symptoms of improvement; and, if gas companies would show themselves a little more in earnest, things would soon go on more pleasantly.

More facts are required connected with the sale and supply of gas to public lamps. We want reliable and practical information; obtained in such ways, and presented in such forms, as shall place it beyond the reach either of gas companies, or public authorities, to dispute or deny. What is gained by keeping upon the old track; making assertions on one side, and denying them on the other, whilst neither party uses the most ordinary means to find out which is in the wrong? It frequently happens that the wrong-doing is pretty evenly balanced. A little obstinacy, a little stiffness, a little discourtesy, are sufficient to keep men apart, and make them look askance at each other. It is sometimes difficult to believe that a good understanding, and the interchange of kindly feelings, are desired by the officials of gas companies, and public authorities; when we know that the merest trifles are so long permitted to stand in the way. The buyers and sellers, the producers and consumers, of other necessaries of life, are not always finding fault with each other, and accusing each other of doing wrong.

Let differences be laid aside, and, by mutual agreement, just by way of an experiment, a few (selected) lamps be supplied by meter. Let the sizes of the gas-flames, the periods of burning, and the rates of consumption, be carefully watched; and the registers of meters taken, and mutually agreed—say, once a month. The knowledge thus acquired, although it would not accurately represent the actual rates of consumption in all the lamps, would do a great deal towards allaying disputes, removing doubts, solving mysteries, and silencing grumblers. Think how easily, inexpensively, and pleasantly, this might be done. Think, also, in settling prices and conditions for supplying gas to public lamps, how valuable such information would be; valuable because it would be plain, intelligible, and indisputable, Would it not be a great improvement upon the old system of computing and estimating, of affirming and

denying? These are the kinds of materials which should be collected and stored up by every gas company; always ready to be used when called for; and which would do more good in negotiating terms for public lamps than half-a-dozen formal meetings, or scores of official letters.

What I have said about the injustice of the public lamp system, of the unreasonable demands of public authorities, of the quantities of gas supplied being greater than the stipulated rates, and of the prices being unfair to the companies and to their private customers, is equally true, and, with few exceptions, as applicable to the whole process of public lighting at this present time as it was thirteen years ago. Some changes have been effected, and a few improvements made, but the principle is the same. That which is wrong in principle, and bad in practice, is not likely to come right by mere effluxion of time. The meter will be the only corrective; and the sooner and more extensively it is applied, the better will it be for all parties.

Let us hope that we may have no more Act-of-Parliament prices for gas to public lamps. If there must be legislation in such matters, let it be rational and equitable. If anything is to be compulsory, let it be in respect to the use of meters.

In looking at prices now paid, or which it is thought ought to be paid, for gas to public lamps, it should be remembered that, in numerous instances, during the last ten or twelve years, great reductions have been made in prices charged to private consumers. Where contracts have run on, and where they have been renewed at or near to former prices, the disproportions between the two rates of charges have diminished. This is as it should be—what has so long been required; and, so far, it is an improvement. But, although in such cases the prices to private consumers have been reduced, and those to public lamps have remained stationary, as a general rule, the differences between the two rates are still too great. Will this ever be understood so as to be equitably dealt with? Never, during the continuance of the contract-system. Abolish the sale of gas to public lamps by contract, sell to all classes of customers by measure, and charge fair prices. This is the way, and the only way, by which things will ever come right, and the manufacture and sale of gas be conducted on the same principles as other businesses.

There must be a beginning somewhere. I hope we may not have to wait long for the day when a gas company will set the example of refusing to sell gas in unknown quantities, and at fictitious prices.

A great deal might be said about the discordant conditions connected with the contract-system—in some towns and parishes the lamps and columns being the property of the authorities—in others, of the gas companies—whilst the periods during which the lights are to be kept burning, the forms and sizes of burners, the quantities of gas agreed to be supplied, and the prices paid, are almost as various as the number of places lighted. In some instances, the periods of lighting and the prices are the only stipulations—the sizes of burners and the quantities of gas being wholly omitted. How easy it would be to clear away all such incongruous materials, and establish a common, simple, and uniform system! Let the public authorities conduct their part of the business in their own way, and according to their own wishes. To them alone should belong the columns, brackets, fittings, burners, and lamps; with the sole authority for dispensing light. A meter to each lamp, a good supply of gas, and a reasonable price per 1000 cubic feet, would be all that could be required of gas companies.

What should be the prices charged for gas supplied to public lamps, as compared with those to private consumers? Let no one, excepting myself, be blamed for anything I have said on this subject. I believe I was the first (publicly) to recommend the exclusive, as well as the partial, use of meters for public lamps; as I did, also, an abatement in the charge to public authorities, on the principle of discounts to large consumers—so many years, and so successfully, practised in manfacturing districts. This was done more than ten years ago, when the disproportions between the two rates of charge were greater than they are now. Notwithstanding the changes during the period mentioned, and, in numerous instances, the closer assimilation of prices paid by the two classes of customers, I have seen no reasons for changing my opinion as to what I believe to be the right principle.

The question has only been incidentally mentioned—never, as I remember, thoroughly examined. Let us turn it round and round, and look at it on all sides. This will be a subject for another letter.

J. O. N. Rutter.

Black Rock, Brighton, Aug. 21, 1862.

SURREY GAS COMPANY AND ST. OLAVE'S BOARD.

Sir,—I thank you for giving publicity to the proceedings of the St. Olave's Board, on the 5th of August. Such "honesty," as Mr. Walker calls it, must astonish his dubious sense of journalistic fairness. For myself, I can never hope to survive the lash of that redoubtable champion. But, I trust I may, with bated breath, once more appear, to controvert the false charges which he has brought against me of misrepresentation. I will place those charges and statements in sequence:—

1. He says, my former letter stated that St. Olave's "followed in the footsteps of the City;" whereas, "St. Olave's moved in it before they (the City) had."

2. I stated that St. Olave's lamps were "first to be lighted, and last to be extinguished." This, he denies; not because he knows it to be otherwise, but because, "if it had been so, the (gas) company would have been sure to have told them of it."

3. "Gas can now be made cheaper; and yet the company want to place the board *on the level of the smallest consumers.*"

Now, for the refutation of these complaints:—

1. I never asserted, nor in any way implied that St. Olave's "followed in the footsteps of the City." That is an instance of Mr. Walker tilting at the windmill of his own erection—the hallucination of his own heated brain. I said, St. Olave's was "putting itself into frightful contortions, evidently jealous lest the City commissioners should run off with all the honours of *agitation.*"

2. I re-asseverate the assertion that, during the latter part of Mr. Croll's supply of gas, St. Olave's lamps "were uniformly the first to be lighted and last to be extinguished." Mr. Walker fences with the question, by saying if this had been so, "the company would have been sure to have told them of it." Not at all; the "company" did not care if St. Olave's lamps burned all day long. I can tell Mr. Walker, however, that Mr. Croll's servants noticed it, and complained. But complaint, or no complaint, is the principle admissible for a moment that a *buyer* should help himself to *quantity, ad libitum,* unwatched, and unmeasured?

3. As to the company placing the parish "on the level of the smallest consumers," Mr. Walker knows better than this. He knows that the smallest consumers pay 4s. 6d. per 1000 feet, and, that the company offer to supply the public lamps at 4s. per 1000; a concession made, as it appears to me, not to Mr. Walker and the brawlers at the board, but to *the public,* whom the gas directors probably and naturally recognize as double customers—renters in private, and ratepayers for the public service.

But, I am bound to observe, in conclusion, that it is possible, when Mr. Walker used the suggestive phrase, "level of the smallest consumers," he might be confounding "smallest consumers" with the "lowest rate" consumers. He has either a fine discernment of language, and so insidiously conveyed an untruth, or he intended to speak truth if he had understood the meaning of language! Let him escape by whichever horn of the dilemma he chooses.

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August 16, 1862.

Register of New Patents.

2827.—David Yoolow Stewart, of Glasgow, Lanark, N.B., iron-founder, for "*Improvements in the manufacture of cast-iron pipes and in similar articles, and in apparatus to be used therein.*" Patent dated Nov. 11, 1861.

This invention comprises various improvements in the manufacture of cast-iron pipes and similar articles, and in apparatus to be used therein, and has for its object increased rapidity and efficiency in the formation of the outer moulds and of the cores, and in the removal of the latter from the castings, combined with simplicity and economy in the various details.

The invention consists, in the first place, in ramming up the outer mould for a pipe or similar article upon a pattern constructed so that the whole, or a part thereof, may be contracted or collapsed to permit of its removal from the mould longitudinally, without rubbing injuriously upon the mould surface, and without its being required to open or divide the mould. The collapsable pattern may be constructed according to any suitable plan, such as is at present in use in making collapsable core-bars; but it is preferred to employ a metal pattern pipe or tube, which is slit longitudinally and is provided with internal wedges or equivalent contrivances for distending or springing it out to the required size, and with a filling-up piece, which is forced into the slit, and thus renders the cylindrical surface perfect. This pattern contracts from its own elasticity on the withdrawal of the wedges or distending appliances. In a similar manner, the outer surface of the core may be shaped by means of a collapsable core-box, consisting of a pipe, out of which a narrow longitudinal strip is cut, and provided with external contrivances for compressing the pipe so as to close the slit, the core being formed in the closed pipe. The compression is removed when the pipe springs open, and the core can be withdrawn longitudinally with facility. In the cases of both outer mould and core, the pattern and core-box may be contrived so that their elasticity tends to give them the shapes to be moulded, instead of the reverse as described. In ramming up the outer moulds or the cores according to this invention, a set of rammers, arranged in a circle, are connected by rods of sufficient length to a frame, to which a vertical reciprocating motion is imparted by the direct action of steam in a cylinder or cylinders, to the piston-rod or rods of which the frame is connected. Provision is made for the change of position consequent on the gradual building up of the sand; this being done, according to one modification, by causing the steam-cylinder or cylinders to rise gradually as the ramming proceeds. It is preferred to simply lift the rammers by the steam action, the actual ramming of the sand being effected by their falling by their own weight. In some cases, however, their descent may be aided by the steam action. According to the present invention, the cores are dried in their places in the outer moulds and along with the latter, whereby a considerable saving in stove space and in fuel is obtained.

In practising the part of the invention relating to the removing of the cores from the castings, according to one modication, a rotating-tool, such as a cylindrical saw or a tube furnished with cutting or abraiding instruments, is made to enter the pipe at one end, and by its rotation to cut or

break away more or less of the sand between the inside surface of the pipe and the central bar of the core. As the action proceeds, the clearing-out tool is made to move along, and, on completing its traverse, will have made the core-bar quite loose and free from the casting, so that it can be removed with the greatest facility. In making up the core with a view to its being removed in this way, it is unnecessary to use an expensive collapsable core-bar, as a simple rigid one, either solid or hollow, may be used, and in using such rigid bar it is not necessary to apply the usual coating of straw beneath the sand. The sand portion of the core may, however, in some cases, be formed with longitudinal cavities, to serve the triple purpose of allowing the air or gases to escape, of providing for the compression of the sand by the contraction of the casting, and of forming outlets for the sand in the subsequent operation of cutting it away, when this is effected from above. These cavities may be on the surface of the core-bar, or partly in it and partly in the sand. If the clearing-out tool is to be applied from below, it is shaped so that the sand can fall clear away as it is cut; the application, however, of a clearing-out tool is not confined to any particular positions of the casting, and various kinds of tools may be used according to circumstances; thus, in some cases, a reciprocating tool working longitudinally may be applied, being introduced at one of the cavities referred to, and being gradually moved round the inside of the casting. Or, according to a further modification, the cavities in the sand may be arranged so as to leave between them barely sufficient material for the support and strength of the core surface, and, on proceeding to clear the casting, a longitudinal or torsional strain may be applied to the core-bar by an hydraulic press or other adequate means, which will have the effect of breaking through the sand between the cavities, and thereby loosen and free the core-bar.

It will be understood by the practical ironfounder, that some well-known minor details and processes concerned in the manufacture of cast-iron pipes and similar articles, have not been referred to in the preceding description, as the present invention does not relate to them.

The claims are—

1. Generally, the forming of the outer moulds and cores for pipes and similar articles, and the removing of the cores, substantially in the manner hereinbefore described, and more particularly,
2. The employing of a collapsable pattern in shaping the outer mould.
3. The employing of an elastic collapsable or expanding core-box in shaping the cores.
4. The actuating of the rammers by means of a direct-acting steam cylinder.
5. The drying of the cores and moulds together, that is, with the cores in their places in the latter.
6. The freeing of the core-bar from the casting by means of a revolving or reciprocating tool partially cutting away the sand.

2830.—James John Shedlock, of Weirdale's Villas, Earl's Court, Kensington, London, for "*Improvements in gas-meters.*" Patent dated Nov. 11, 1861.

This invention has for its object the rendering a gas-meter capable of delivering as near as may be the quantity of gas within the hour for which it is constructed, and, at the same time, of correctly measuring the quantity of gas passed through it, although a less number of lights have been burning than the meter is arranged to supply. For this purpose, there is applied to a meter the apparatus herein-described, so as to insure the meter working at a pressure not exceeding a regulated and determined maximum pressure. The apparatus is composed of a bent tube, in which is placed any suitable fluid; one end of this tube is connected with the valve-box into which the supply of gas first enters; consequently, the fluid in the bent tube will be subjected to the pressure of the in-coming gas. The other end of the bent tube has a float, connected with a lever, so arranged as to tend to close the inlet-valve when the pressure of the gas depresses the fluid in the leg of the bent tube which is connected with the valve-box, and so raise the fluid and the float in the other leg of the bent tube. The gas, after passing the inlet-valve, flows to a second valve-chamber, where, in the case of wet gas-meters, there is a second valve acted on by the ordinary float of the meter. By these means, the maximum pressure at which the gas shall pass into a meter may be readily regulated. The above-described apparatus may also be applied to a dry meter.

2838.—William Cooke, of 26, Spring Gardens, St. Martin's-in-the-Fields, London, civil engineer, for "*Improvements in the construction of carriages and vehicles, and in the means of ventilating the same; this part of the invention being applicable also to windows generally, and other such openings.*" Provisional protection only obtained. Dated Nov. 12, 1861.

That portion of the invention adapted to the ventilation of rooms by means of the windows, or other openings, consists in the application thereto of wire-gauze, or other perforated material, so arranged as to form a series of folds, extending and contracting at pleasure, for the purpose of allowing the vitiated air to pass off, at the same time that it admits the pure air, and excludes draughts or dust, the folds being so arranged that they rise and fall with the raising and lowering of the window, and are closely folded at the top of the window or opening when not in action. For this purpose, there is constructed a framework, of suitable size and material to the window or opening to which the perforated material is to be applied; and there is fixed therein, in a suitable manner, the folds or slabs of wire-gauze, or other suitable material. The apparatus can be so arranged that it may be brought into use, or disconnected, by the movement of the window; and so that when the window is drawn down, it brings the ventilator with it, as far as a certain point, but, as the window is drawn below such point, the ventilator ascends by the descending action of the window or sash, and may be again brought into use by closing and opening the window. A ventilator constructed on this principle, may be made either as a fixture or moveable at pleasure, and so as to be applied to any aperture by which air or light is admitted, not being confined to any particular shape or form.

2843.—John Henry Johnson, of 47, Lincoln's Inn Fields, London, and of 166, Buchanan Street, Glasgow, N.B., gentleman, for "*Improvements in the construction of steam or other vapour, and water or other liquid-tight joints.*" A communication. Patent dated Dec. 12, 1861.

The invention relates to a peculiar construction of joint, suitable for steam, gas, and water-pipes, or for other purposes where a perfectly tight joint is required, and consists in the combination of an open or split packing ring, of copper or other suitable metal, with a V or angular circular groove formed on one or both junction surfaces, or with angular or bevelled surfaces on one or both faces of the joint, in such a manner that the ring, which is open or in a slightly expanded state when placed in or upon one of the angular surfaces or grooves, shall be closed and forced into its proper place by the act of compressing the two parts of the joint together. In making the ring above mentioned, care should be taken that the two abutting ends of the piece of wire or round metal, after it has been bent into an annular form, be made perfectly square and even, so that, when forced against each other, a perfectly tight joint in the ring itself will be formed. In all cases, the ring should be slightly larger in diameter than is required for the actual joint, before it is compressed by the tightening up of the two halves of such joint, so that the compression of the two parts of the joint will at the same time effect the tight closing of the split in the ring, and so complete the efficiency of the entire joint. Any section of ring may be used with any form of groove or angular surface, provided such ring and surfaces be so constructed as to effect the closing of the ring by the compressing together of the two junction surfaces.

The claim is for—

1. The general construction of steam or other vapour, water, or other liquid-tight joints, as hereinbefore described.
2. The making of joints for steam apparatus or other purposes wherein an open or split wire ring is used, and wherein the ring is made tight at the junction, being compressed by the action of the outer angle of the groove in the casting, the ring being made larger in diameter than the groove.
3. The application and use of an open wire ring, or a wire cord, or other form of metal, bent into an annular shape, in combination with an angular surface or other form of groove, or with angular surfaces on one or both the castings, which shall compress the ends of the interposed ring together, for the purpose hereinbefore described.

APPLICATIONS FOR LETTERS PATENT.

2233.—Alexis Jean Moreau, chemist, and Adolphe Ernest Ragon, gentleman, both of Bernard Street, Russell Square, London, W.C., for "*Improvements in the mode of, and apparatus for, treating bituminous and carbonaceous substances for the purpose of obtaining the various products, volatile liquid and solid, which they contain, and also in the treatment and application of such products.*" Aug. 9, 1862.

2234.—Alexis Jean Moreau, chemist, and Adolphe Ernest Ragon, gentleman, both of Bernard Street, Russell Square, London, W.C., for "*Improvements in the manufacture of gas and coke.*" Aug. 9, 1862.

2249.—Alfred Joseph Martin, of High Street, Bow, London, E., James Goss, of Prospect House, Bow Road, London, E., and John Bush, of Bow Common, Bromley, London, E., for "*Improvements in apparatus for distillation.*" Aug. 11, 1862.

2252.—John Ramsbottom and George Hacking, of Accrington, Lancashire, machinists, for "*Improvements in machinery or apparatus for measuring and registering the flow of water and other fluids.*" Aug. 12, 1862.

2267.—John Cooper, of Town Malling, Kent, plumber, for "*Improvements in valves and buckets for pumps, and in valves or cocks for other uses.*" Aug. 13, 1862.

2286.—George White, of Torquay, Devonshire, plumber, Francis Buckland, of Newton Abbott, in the same county, auctioneer, and Charles Rees, of Newton Bushel, in the same county, accountant, for "*Improvements in the manufacture of water-closets.*" Aug. 14, 1862.

2300.—Anne Shepard, of 55, Victoria Street, Westminster, London, S.W., for "*Improvements in obtaining light, and in apparatus connected therewith.*" Aug. 15, 1862.

2303.—James Newman, of Birmingham, Warwickshire, jeweller, for "*Improvements in the manufacture of metallic tubes.*" Aug. 15, 1862.

2313.—Frederic Barnett, residing at 164, Rue de Rivoli, Paris, late of 230, Oxford Street, London, W., for "*An improved lamp or lantern for street lighting, and other purposes.*" Aug. 18, 1862.

2321.—Victorin Florentin Clevet, of 182, Rue d'Allemagne, Paris, engineer, for "*An improved self-acting apparatus for supplying boilers with water, applicable also to the raising and to the measuring of liquids.*" Aug. 19, 1862.

GRANTS OF PROVISIONAL PROTECTION.

2059.—George John Yates, of Liverpool, Lancashire, chemist, and John William Ward Tindall, also, of Liverpool, chemist, for "*A process of deodorizing paraffin, coal, pitch, rock, and other like oils and hydrocarbons.*" July 19, 1862.

2105.—Touissant Lemaistre, architect, of 3, Rue de Grammont, Paris, for "*Improvements in privies.*" July 24, 1862.

2139.—Fraser Selby, of Surbiton, Kingston, Surrey, for "*Improvements in surface-condensers.*" July 28, 1862.

2143.—Charles William Siemens, of 3, Great George Street, London, S.W., for "*Improvements in gas-engines.*" July 28, 1862.

2145.—Zerah Colburn, of 15, Tavistock Street, Bedford Square, London, W.C., mechanical engineer, for "*Improvements in steam-pumping engines.*" July 29, 1862.

2149.—Patrick Sarsfield Deolan, of the Commercial Foundry, Commercial Street, Manchester, Lancashire, engineer, for "*An improved composition to be employed for covering projectiles and the internal and external surfaces of vessels, which is also applicable to the manufacture of tubing, and to other useful and ornamental purposes.*" July 29, 1862.

2165.—WILLIAM CLARK, of 53, Chancery Lane, London, W.C., engineer, and patent agent, for "*Improvements in gas-burners.*" A communication. July 30, 1862.

2169.—JOHN WYMAN WOODFORD, of Sutherland Street, Walworth, London, S., for "*Improvements in machinery for raising or forcing water.*" July 30, 1862.

2170.—ELIJAH FREEMAN PRENTISS, of Birkenhead, Cheshire, chemist, and ROBERT ADAM ROBERTSON, of Liverpool, Lancashire, brewers and distillers engineer, for "*Improvements in obtaining products from rock-oil, coal-tar, and other like mineral substances in a more or less pure and deodorized state, and in the apparatus to be used therefor, and which is also applicable to distillation in general.*" July 31, 1862.

2178.—JOHN SINCLAIR, of Glasgow, Lanark, N.B., manufacturer, for "*Improved arrangements for ventilating, and in part applicable for fumigating.*" Aug. 1, 1862.

2199.—WILLIAM CLARK, of 53, Chancery Lane, London, W.C., engineer and patent agent, for "*Improvements in the purification of water, and in apparatus employed therein.*" A communication. Aug. 5, 1862.

2201.—JOHN RICHARD NICHOLL, of Streatham, Surrey, clerk, for "*Improved means of, and apparatus for, utilizing and disposing of the sewage of towns and villages.*" Aug. 5, 1862.

2206.—WILLIAM GEORGE VALENTIN, of the Royal College of Chemistry, Oxford Street, London, W., chemist, and FREDERICK LEVICK, of Blaina, Monmouthshire, ironmaster, for "*Improvements in the generation of combustible gases for lighting and heating purposes, and in the mode of applying such gases to the manufacture of iron, glass, and other processes in the arts where great heat is required.*" Aug. 6, 1862.

2234.—ALEXIS JEAN MOREAU, chemist, and ADOLPHE ERNEST RAGON, gentleman, both of Bernard Street, Russell Square, London, W.C., for "*Improvements in the manufacture of gas and coke.*" Aug. 9, 1862.

NOTICES TO PROCEED.

927.—WILLIAM MALAM, of Skinner Street, London, E.C., gas engineer, for "*An improvement in the manufacture of gas, and improved apparatus to be employed in such manufacture.*" April 2, 1862.

1008.—SQUIRE FARROW, of Ashton-under-Lyne, Lancashire, watch-case maker, for "*Improvements in machinery, or apparatus for regulating the supply of steam from the boiler to the cylinder or pipes of steam engines, which improvements are also applicable to gases or fluids.*" April 9, 1862.

1043.—WILLIAM EDWARD GEDGE, of 11, Wellington Street, Strand, London, W.C., patent agent, for "*An improved lamp for lighting mines.*" A communication. April 11, 1862.

1059.—ARCHIBALD SAMUELS CAMPBELL, of Hampstead, London, N.W., gentleman, for "*Improvements in surface-condensers.*" April 12, 1862.

1062.—EDWARD PEYTON, of Birmingham, Warwickshire, manufacturer, and WILLIAM FOTHERGILL BATHO, of the same place, manufacturer, for "*Improvements in angle iron applicable to metallic bedsteads, roofs, bridges, and other similar purposes.*" April 14, 1862.

1075.—RICHARD ARCHIBALD BROOMAN, of 166, Fleet Street, London, E.C., patent agent, for "*Improvements in pumps.*" A communication. April 14, 1862.

1128.—RICHARD ARCHIBALD BROOMAN, of 166, Fleet Street, London, E.C., patent agent, for "*Improvements in taps and valves.*" A communication. April 17, 1862.

1525.—EDWARD FEWTRELL, of Birmingham, Warwickshire, engine-fitter, for "*Improvements in the manufacture of metal tubes, and in machinery to be employed for that purpose.*" May 20, 1862.

2054.—JOSEPH RICHARD ABBOTT, of Birmingham, Warwickshire, lamp-manufacturer, for "*Improvements in sliding chandeliers, gaseliers, and other pendent lamps.*" July 18, 1862.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £50 BEFORE THE EXPIRATION OF THE THIRD YEAR.

1788.—JOHN HEWETT, "*Improvements in self-acting water-closets.*" Aug. 3, 1859.

1810.—FRANCIS WILLIAM BEAUMONT, "*A hydraulic apparatus applicable to transmitting, regulating, and measuring the supply or flow of liquids.*" Aug. 5, 1859.

1835.—THOMAS DUNN, "*Improvements in machinery, and apparatus for elevating and regulating the level and flow of liquids, part of which is applicable for propelling vessels.*" Aug. 9, 1859.

1854.—JOHN JAMES SPREED, "*Improvements in the manufacture of pipes, tubes, and hollow cylinders.*" Aug. 10, 1859.

1859.—DAVID HULETT and GEORGE PRUDDEN, "*Improvements in apparatus for the manufacture and distribution of gas, and in apparatus applicable for internal or external illumination.*" Aug. 11, 1859.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £100 BEFORE THE EXPIRATION OF THE SEVENTH YEAR.

1786.—JAMES ALEXANDER MANNING, "*Improvements in the treatment of sewerage.*" Aug. 7, 1855.

Legal Intelligence.

COURT OF EXCHEQUER CHAMBER.

WEDNESDAY, MAY 14.

(*Before Lord Chief Justice* ERLE; *Lord Chief Baron* POLLOCK; *Justices* WILLIAMS *and* KEATING; *and Barons* BRAMWELL *and* WILDE.)

BAMFORD *v.* TURNLEY.

Mr. MELLISH, Q.C., Serjeant PETERSDORFF and Mr. GARTH, appeared for the appellant; and Mr. LUSH, Q.C., and Mr. HONYMAN for the respondent.

This was an appeal from the Court of Queen's Bench under the following circumstances.

In the month of June, 1857, some land, forming a part of the Beulah Spa estate at Norwood, was offered for sale in lots by public auction, in accordance with certain printed particulars and conditions of sale. Captain Edward Strode, the brother-in-law of the plaintiff, purchased lot No. 11 of such land, containing 2a. 1r. 33p., and built a residence thereon. The house was finished in 1858, and shortly afterwards the plaintiff became the tenant of the house and property.

The defendant, who is a solicitor in London, bought some other lots of the same property in the year 1858, under the same particulars and conditions. In the month of June, 1860, the defendant (with the view of burning bricks made out of the brick-earth found upon the land, and thereby obtain bricks to build upon his land) erected a clamp of bricks on lot 14, at a distance of 180 yards from the plaintiff's house. The plaintiff thereupon brought an action against the defendant for a nuisance.

In the first count of the declaration, the plaintiff complained that the defendant had erected certain brick-kilns upon his own land near to his (the plaintiff's) house and premises, and had wrongfully burned a large quantity of bricks there, and caused noxious fumes and stenches to arise therefrom to the great nuisance and annoyance of the plaintiff and his family.

The second count of the declaration alleged a similar nuisance caused by the defendant placing a quantity of decomposed ashes and bones in the immediate neighbourhood of the plaintiff's house.

The defendant pleaded to both counts "not guilty," and thereupon issue was joined.

The cause was tried at the Surrey summer assizes, 1860, before Lord Chief Justice Cockburn, when the above-stated facts were given in evidence; and it was proved that there was an annoyance to the plaintiff arising from the erection and use of the brick-clamp as complained of in the first count, sufficient *primâ facie* to constitute a cause of action.

For the defendant, it was proved that the erection and use of the clamp by the defendant as complained of was temporary only, and for the sole purpose of making bricks on his own land and from the clay found there, with a view to the erection of dwelling-houses on his own land, and that the clamp for burning the bricks was placed on that part of the defendant's land most distant from the plaintiff's house, and so as to create no further annoyance than necessarily results from the burning of bricks. It was also proved that building was going on in the neighbourhood, the plaintiff's house being within ten minutes' walk of the new railway-station at Norwood; that during the preceding year bricks had been burned in the neighbourhood; that during the last seventeen or eighteen years bricks had from time to time been burned at various parts of the fields of which the site of the clamp in question then formed part, that field having been divided at the time of the sale into various lots; and also that bricks had previously been made on the spot where the plaintiff's house now stands. The single question, therefore, was, whether under the circumstances so proved an action could be maintained in respect of such annoyance?

Upon this state of facts, Lord Chief Justice Cockburn intimated that, in his opinion, the case came within the principle laid down in *Hole v. Barlow* (4 C. B., N. S., 334), and directed the jury, upon the authority of that case, that if they should be of opinion that the spot was a proper and convenient spot, and the burning of the bricks under the circumstances aforesaid was a reasonable use by the defendant of his own land, the defendant was so entitled to use his land, and would be entitled to a verdict upon the first count, independent of whether there was an interference with the plaintiff's comfort or whether there was not. After this ruling of the learned judge, a verdict was by arrangement entered for the defendant on the first count, leave being reserved to the plaintiff to move to set aside that verdict if the court should be of opinion that the ruling of the Lord Chief Justice, founded upon the authority of *Hole v. Barlow*, was erroneous. Upon the second count, a verdict was by arrangement entered for the plaintiff with 1s. damages, but no question arose on that count.

In the following Michaelmas term, the Court of Queen's Bench was accordingly moved, on the part of the plaintiff, to show cause why the verdict found for the defendant should not be set aside, and a verdict entered for the plaintiff for 40s. damages; but the court refused to grant a rule. From this judgment the plaintiff now appealed, and it was agreed, if the court should be of opinion that upon the facts as stated the ruling of the Lord Chief Justice, founded on the decision of *Hole v. Barlow*, was erroneous, the verdict found for the defendant on the first count was to be set aside, and a verdict entered for the plaintiff instead thereof, with 40s. damages. If the court should be of a contrary opinion, the verdict entered for the defendant upon the first count was to stand.

Mr. MELLISH, for the appellant, the plaintiff in the court below, argued that this was not a reasonable and proper use of the defendant's land. There might sometimes be such an annoyance as amounted to a mere inconvenience, but, in the present case, the rent of the plaintiff's house was reduced in value one-half. The question was, how much nuisance might be justified? The rule as laid down in *Hole v. Barlow* was vague and indefinite, and difficult to limit, and that alone was sufficient to throw a doubt on it. To whom was this brick-burning convenient? Its convenience to the defendant did not justify the nuisance thrust on the plaintiff. What was a nuisance in one place would not be in another. Thus, what would be a nuisance in a clear and open country would not be a nuisance if a man took up his residence in a manufacturing town.

Baron WILDE inquired, whether the learned counsel would say that it was a nuisance to set up a butcher's shop or a brewery?

Mr. MELLISH said he should, for he was not disposed to admit any exception; but, if there were any, it was in favour of trade. There was nothing to warrant the proposition laid down in *Hole v. Barlow*. That case was decided upon the authority in Com. Dig., tit. "Action on the Case," C., where it was said: "So an action (upon the case) does not lie for a reasonable use of any right, though it be to the annoyance of another; as if a butcher, brewer, &c., use his trade in a convenient place, though it be to the annoyance of his neighbour;" but no authority was cited in support of that proposition. Increasing the right to a nuisance was going back in the administration of the law. New means were discovered to avoid nuisances day by day. The common law rule was, that a man could not create a nuisance on his land, to the prejudice of another. The learned counsel referred to a number of cases in support of his proposition.

Mr. LUSH, for the respondent, the defendant below, relied upon the case of *Hole v. Barlow*, which had been constantly referred to with approbation. Here both the parties were purchasers of distinct lots of ground laid out and sold as building-ground. The particulars issued before the sale held out that there was abundance of brick-earth and gravel on the land, which made it more advantageous for building. There was no principle of law that a person had an absolute right to pure air; and any such natural right must give way to the reasonable use by the owner of the adjoining land of his property. None of the cases were contrary to that proposition. Mere annoyance was not sufficient to support an action. A butcher might set up his shop in a fashionable street; it might be an annoyance, and might depre-

ciate the adjoining property, but no action would lie. He submitted, therefore, that this was a reasonable use by the defendant of his property.

SATURDAY, JULY 12.

The court this day delivered judgment.

Justice WILLIAMS said: I have to deliver the judgment of Chief Justice Erle, my brothers Keating and Wilde, and myself. On the argument of this case, there was some contest as to what the true question was which the court had to consider. On the part of the plaintiff, it was said to have been proved at the trial, beyond dispute, that the burning of the bricks in the kilns of the defendant was a nuisance, and that the point reserved was, whether it was legalized by the other facts which the jury must be taken to have found to exist? On the part of the defendant, it was said that the true point was, whether, under all the circumstances of the case, the burning of the bricks amounted to an actionable nuisance. It is not, perhaps, material which of these contentions is correct, for the Lord Chief Justice, at the trial, directed the jury, on the authority of *Hole v. Barlow* (4 C. B., 334), to find for the defendant, notwithstanding his burning the bricks had interfered with the plaintiff's comfort, if they were of opinion that the spot where the bricks were burned was a proper and convenient spot, and the burning of them was, under the circumstances, a reasonable use by the defendant of his own land. The jury, consequently, if they were of that opinion, would have been bound to find their verdict for the defendant, notwithstanding they were also of opinion that the brick-kilns of the defendant, by emitting corrupted air upon the plaintiff's house, had rendered it unfit for healthy or comfortable occupation. It was, therefore, treated as a doctrine of law, that, if the spot should be found by the jury to be proper or convenient, and the burning of the bricks a reasonable use of the land, these circumstances would constitute a bar to the action; and, if there is in truth no such doctrine, there was a misdirection. It is the same thing as if there had been a plea averring the existence of the circumstances, and a demurrer to the plea. Such a plea, although it would admit all the allegations in the declaration, would be a good plea by way of avoidance, if the direction of the Chief Justice was right. And it is not material to inquire whether it would be good as averring facts which amount to a legalization of the nuisance stated in the declaration, or as superadding facts which, taken together with those stated in the declaration, show that the alleged annoyance was an actionable nuisance. In either point of view, the question for our consideration appears to be, whether the case of *Hole v. Barlow* was well decided, and we are of opinion that it was not. That decision was plainly founded on a passage in Comyns' Digest, entitled, "Action on the Case" (letter C), which is in the following words:—"So an action does not lie for a reasonable use of my right, though it be to the annoyance of another, as if a butcher, brewer, &c., use his trade in a convenient place, though it be to the annoyance of his neighbour." It may be observed that, in the language of this dictum, for which no authority is cited by Comyns, there is a want of precision, especially in the words "reasonable and convenient," which renders its meaning by no means clear; and it may be doubted whether the court, in *Hole v. Barlow*, did not misunderstand it. What is a "convenient" place? Does the expression mean, as the court understood it in that case, that the place is proper and convenient for the purpose of carrying on the trade? Or, does it mean that it is a place where a nuisance will not be caused to another? It has been pointed out by Mr. H. W. Willes, in his valuable edition of Gale on Easements, that this latter sense of the word "convenient" is the one adopted by Chief Justice Hyde, in *Jones v. Powell* (Palm. s. 36, 539), where he says: "A tan-house is necessary, for all men wear shoes; and, nevertheless, it may be pulled down if it be erected to the nuisance of another; in like manner of a glass-house; and they ought to be erected in places convenient for them." The term appears to be used in the same sense when applied to questions as to the public nuisances. Thus, it is said in Hawkins's Pleas of the Crown (Book 1, c. 75, s. 10): "It seems to be agreed that a brewhouse erected in such an inconvenient place, wherein the business cannot be carried on without greatly incommoding the neighbourhood, may be indicted as a common nuisance." It would seem, therefore, that, just as the use of an offensive trade will be indictable as a public nuisance, if it be carried on in an inconvenient place—that is to say, a place where it greatly incommodes a multitude of persons—so it will be actionable as a private nuisance if it be carried on in an inconvenient place—that is to say, a place where it greatly incommodes an individual. If this be the true construction of the expression "convenient," in the passage from Comyns' Digest, the doctrine contained in it amounts to no more than what has been settled law—namely, that a man may, without being liable to an action, exercise a lawful trade, as that of a butcher, brewer, or the like, notwithstanding it be carried on so near the house of another as to be an annoyance to him, in rendering his residence there less delectable or agreeable, provided the trade be so conducted that it does not cause what amounts, in point of law, to a nuisance to the neighbouring house. In *Hole v. Barlow*, however, the court appear to have read the passage as containing a doctrine that a place may be "proper and convenient" for the carrying on of a trade, notwithstanding it is a place where the trade cannot be carried on without causing a nuisance to a neighbour. This is a doctrine which has certainly never been judicially adopted in any case before that of *Hole v. Barlow*, and, moreover, the adoption of it would be inconsistent with the judgment pronounced in some cases cited at the bar during the argument, and more especially in the case of *Walter v. Selfe* (4 De G. & Sm., 315); and the introduction of such a doctrine into our law would, I think, lead to great inconvenience and hardship, because, as was forcibly argued by Mr. Mellish, in contending for the plaintiff, if the doctrine is to be maintained at all, it must be maintained to the extent that, however ruinous may be the amount of nuisance caused to a neighbour's property by carrying on an offensive trade, he is without redress if the jury shall deem it right to find that the place where the trade is carried on is a proper and convenient place for the purpose. It should be observed that the direction of the judge to the jury in *Hole v. Barlow*, which was upheld by the Court of Q. B., was simply that the verdict should be for the defendant, if the place where the bricks were burned was a proper and convenient place for the purpose. But, in the present case, the Lord Chief Justice's direction to the jury pointed out a further condition—namely, "if the burning of the bricks was, under the circumstances, a reasonable use by the defendant of his own land." It remains, therefore, to consider whether the doctrine adopted in *Hole v. Barlow*, if accompanied by this condition, is maintainable. If it be good law that the fitness of the locality prevents the carrying on of an offensive trade from being an actionable nuisance, it appears necessarily to follow that this must be a reasonable use of the land; but, if it is not good law, and if the true doctrine is, that whenever, taking all the circumstances into consideration, including the nature and extent of the plaintiff's enjoyment before the acts complained of, the annoyance is sufficiently great to amount to a nuisance, according to the ordinary rule of law, an action will lie, whatever the locality may be, then surely the jury cannot properly be asked whether the causing of the annoyance was a reasonable use of the land. If such a question is proper for their consideration in an action such as the present, for a nuisance by emitting corrupted air into the plaintiff's house, we can see no reason why a similar question may not be submitted to the jury in actions for other violations of the ordinary rights of property—that is to say, the transmission by a neighbour of water in a polluted condition. But, certainly, it would be difficult to maintain, as the law now stands, that the jury in such an action ought to be told to find for the defendant, if they thought that the manufactory which caused the impurity was built on a proper and convenient site, and that the working of it was a reasonable use by the defendant of his own land. Again, where an easement has been gained, in addition to the ordinary right of property (that is to say, where a right has been gained to the liberal passage of light and air), no one has ever suggested that the jury might be told, in an action for obstructing the free passage of light and air, to find for the defendant, if they were of opinion that the building which caused the obstruction was erected in a proper and convenient place, and in the reasonable enjoyment by the defendant of his own land. And yet, on principle, it is difficult to see why such a question should not be left to the jury, if *Hole v. Barlow* was well decided. We are, however, of opinion that the decision was wrong, and, consequently, that the direction of the Lord Chief Justice, which was founded on it, was erroneous; and that the verdict for the defendant ought to be set aside, and a verdict entered for the plaintiff.

Chief Baron POLLOCK: The question in this case is, whether the direction of the Lord Chief Justice, professing to be founded on the decision of the decision of the Court of Common Pleas in *Hole v. Barlow* (4 C. B., N. S., 334), was right; and, in my judgment, substantially it was right, taking it to have been as stated in the case—namely, that if the jury thought that the spot was convenient and proper, and the burning of the bricks was, under the circumstances, a reasonable use by the defendant of his own land, the defendant would be entitled to a verdict. I do not think that the nuisance for which an action will lie is capable of any legal definition which will be applicable to all actions, and useful in deciding them. The question so entirely depends on the surrounding circumstances—the place where, the time when, the alleged nuisance what, the mode of committing it how, and the duration of it whether temporary or permanent, occasional or continual—as to make it impossible to lay down any rule of law applicable to every case, and which will also be useful in assisting a jury to come to a satisfactory conclusion. It must at all times be a question of fact with reference to all the circumstances of the case. Most certainly, in my judgment, it cannot be laid down as a legal proposition or doctrine, that anything which, under any circumstances, lessens the comfort, or endangers the health or safety of a neighbour, must necessarily be an actionable nuisance. That may be a nuisance in Grosvenor Square which would be none in Smithfield Market; that may be a nuisance at midday which may not be a nuisance at midnight; that may be a nuisance which is permanent and continual, which would be no nuisance if temporary or occasional only. A clock striking the hour, or a bell ringing for some domestic purpose, may be a nuisance if unreasonably loud and discordant, of which the jury alone must judge; but, although not unnecessarily loud, if the owner, from some whim or caprice, made the clock strike the hour every ten minutes, or the bell ring continually, I think that a jury would be justified in considering it to be a very great nuisance. In general, a kitchen-chimney suitable to the establishment to which it belonged could not be deemed a nuisance; but, if built in an inconvenient place, or on purpose to annoy the neighbours, it might, I think, very properly be treated as such. The compromises that belong to social life, and upon which the peace and comfort of it mainly depend, will furnish an indefinite number of examples where some apparent natural right is invaded, some enjoyment abridged, to provide for the more general convenience or necessities of the whole community; and I think the more the details of the questions are examined, the more clearly it will appear that all that the law can do is to lay down some general or vague proposition, which will be no guide to the jury in each particular case that may come before them. I am of opinion that the passage in Comyns' Digest, properly understood, is good law. I think the word "reasonable" cannot be an improper word, or too vague to be used on this occasion, seeing that the question whether a contract has been reasonably performed with reference to time, place, and subject-matter, is one that is put to a jury almost as often as a jury is assembled, and if the act complained of be done in a convenient manner, by which I understand so as to give no unnecessary annoyance, and be a reasonable exercise of some apparent right, or a reasonable use of the land, house, or property of the party "under all the circumstances," in which I include the degree of inconvenience it will produce, then I think no action can be sustained if the jury find that it was reasonable, as the jury must be taken to have found that it was reasonable that the defendant should be allowed to do what he did, and reasonable that the plaintiff should submit to the inconvenience occasioned by what was done; and I cannot understand that any person administering the law can pronounce that to be a nuisance which the jury, under all the circumstances, have found to be a reasonable use, including this, to be "reasonable" that the defendant should do it, and reasonable that the plaintiff should submit to it. And this gets rid entirely of the difficulty suggested by the judgment of my brother Williams, just read. No one can suppose that the jury could find that to be reasonable which produced any ruinous effect upon the neighbour. I, however, have to add one word with respect to the proposed judgment of the court. The case does not state that leave was given by the consent of the defendant's counsel, or, indeed, at all, to enter a verdict for the plaintiff for 40s. damages. It appears to me that all that the Court of Error can do, if it disapproves of the direction of the Lord Chief Justice, is to award a *venire de novo*, that the jury may find a verdict under a proper direction; for there is strong ground for contending that the entire plot of ground, of which the plaintiff's and the defendant's land formed a part, was sold in various lots, on the understanding that the brick-earth should be made into bricks, and burned, in order to erect houses on the different lots, and it would seem not perfectly just, that the purchaser of one of the lots should actually turn his brick-earth into bricks, and burn them on his plot, which is the fact here, and build a house, and then deny the same advantage to his neighbours, who have concurred with him in buying other portions of the same ground. It does not occur to me, in the statement of the present case, that this court has the power to enter for the plaintiff a verdict for 40s. In my judgment, the decision of the court below should be affirmed.

Baron MARTIN read the judgment of Baron Bramwell, as follows:—I am of opinion that the judgment should be reversed. The defendant has done that which, if done wantonly or maliciously, would be actionable, as being a nuisance to the plaintiff's habitation, by causing a sensible diminution of the comfortable enjoyment of it. This, therefore, calls on the defendant to justify or excuse what he has done, and his justification is this: he says that the nuisance is not to the health of the inhabitants of the plaintiff's house; that it is of a temporary character, and is necessary for the beneficial use of his (the defendant's) land, and that the public good requires that he should be entitled to do what he claims to do. The question seems to me to be, is this a justification in law? And, in order not to make a verbal mis-

take, I will say, a justification for what is done is a matter which makes what is done no nuisance. It is to be borne in mind, however, that, in fact, the act of the defendant is a nuisance such that it would be actionable if done wantonly or maliciously. The plaintiff then has a *primâ facie* case; the defendant has infringed the maxim *sic utere tuo ut alienum non ledas*. Then what principle or rule of law can he rely on to defend himself? It is clear to my mind that there is some exception to the general application of the maxim mentioned. The instances put during the argument, of burning weeds, emptying cesspools, making noises during repairs, and other instances which would be nuisances if done wantonly or maliciously, nevertheless may be lawfully done. It cannot be said that such acts are not nuisances, because by the hypothesis they are, and it cannot be doubted that if a person maliciously, and without cause, made close to a dwelling-house the same offensive smells as may be made in emptying a cesspool, an action would lie. Nor can these cases be got rid of as extreme cases, because such cases are properly used for testing a principle; nor can it be said that the jury settled such questions by finding there is no nuisance, though there is; for that is to suppose they violate their duty; and, if they discharged their duty, such matters would be actionable. There must be then some principle on which such cases must be accepted. It seems to me that that principle may be deduced from the character of these cases, and is this, namely, that those acts necessary for the common and ordinary use and occupation of land and houses may be done, if conveniently done, without submitting those who do them to an action. This principle would comprehend all the cases I have mentioned, but would not comprehend the present, where what has been done was not the using of land in a common and ordinary way, but in an exceptional manner, not unnatural or unusual, but not the common and ordinary use of land. Then, can this principle be extended to, or is there any other principle which will comprehend the present case? I know of none. It is for the defendant to show it. There is an obvious necessity for such a principle as I have mentioned. It is as much for the advantage of one owner as of another, for the very nuisance the one complained of as the result of the ordinary use of his neighbour's land, he himself will create in the ordinary use of his own, and the reciprocal nuisances are of a comparatively trifling character. The convenience of such a rule may be indicated by calling it a rule of give and take, live and let live. But none of the above reasoning is applicable to such a case of nuisance as the present. It had occurred to me that any unnatural use of the land, if of a temporary character, might be justified; but, I cannot see why its being of a temporary nature should warrant it. What is temporary? One, five, or twenty years? If twenty, it would be difficult to say that a brick-kiln in the direction of the prevalent wind for twenty years would not be as objectionable as a permanent one in the opposite direction. If temporary to build a house on the land, why not temporary to exhaust the brick-earth? I cannot think, then, that the nuisance being temporary makes a difference. But it is said that, temporary or permanent, it is lawful, because it is for the public benefit. Now, in the first place, that law, to my mind, is a bad one, which, for the public benefit, inflicts loss on an individual without compensation. But, further, with great respect, I think this consideration misapplied in this and in many other cases. The public consists of all the individuals of it, and a thing is only for the public benefit when it is productive of good to those individuals on the balance of loss and gain to all; so that if all the loss or all the gain were borne and received by one individual, he or the whole would be a gainer. But wherever this is the case, wherever a thing is for the public benefit, properly understood, the loss of all the individuals of the public who lose will bear compensation out of the gains of those who gain. It is for the public benefit there should be railways, but it would not be unless the gain of having the railway was sufficient to compensate the loss occasioned by the use of the land required for its site; and, accordingly, no one thinks it would be right to take an individual's land, without compensation, to make a railway. It is for the public benefit that trains should run, but not unless they pay their expenses. If one of those expenses is the burning down of a wood of such value that the railway owners would not run the train and burn down the wood if it were their own, neither is it for the public benefit they should if the wood is not their own. If, though the wood were their own, they still would find it compensated them to run trains at the cost of burning the wood, then they obviously ought to compensate the owner of such wood, not being themselves, if they burn it down in making their gains. So, in like way, in this case: a money value indeed cannot easily be put on the plaintiff's loss, but it is equal to some number of pounds or pence—£10, £50, or what not. Unless the defendant's profits are enough to compensate this, I deny it is for the public benefit he should do what he has done. If they are, he ought to compensate. The only objection I can see to this reasoning is, that by injunction or abatement of nuisance a man who would not accept a pecuniary compensation might put a stop to works of great value, and much more than enough to compensate him. This objection, however, is of small practical importance. It may be that the law ought to be amended, and some means provided to legalize such cases, as I believe is the case in some foreign countries in giving compensation; but I am clearly of opinion that though the present law may be defective, it would be made worse, and unjust and inexpedient, if it permitted such power of inflicting loss and damage on individuals without compensation, as is claimed by the argument for the defendants. Since the decision of *Hole v. Barlow*, claims have been made to poison and foul rivers, and to burn up and to devastate land, on the ground of public benefit. I am aware that case did not decide so much; but I have a difficulty, for the reasons I have mentioned, in saying, that what has been so contended does not follow from the principles enunciated in that case. If we look to analogous cases, I find nothing to countenance the defendant's contention. A riparian owner cannot take water for the public benefit; he cannot foul it for the public benefit, if to the prejudice of another owner. A common cannot be enclosed on such principles. A window, the fee-simple value of which is 5s., cannot be stopped up by a building worth a million pounds, of the greatest public benefit. I confess, then, I can see no reason or principle for the defendant's contention. With the greatest respect for those who decided in *Hole v. Barlow*, I cannot, for the reasons I have given, agree with it. That case reminds me strongly of what the late Lord Truro said, that he suspected a case very much when he found it continually quoted immediately after its decision; and certainly *Hole v. Barlow* has been so quoted, and defences made on its authority which never would have been thought of before it appeared. It stands alone. It is practically opposed to cases of daily occurrence, where such a point might have been made, and was not. It is countenanced by the passage from Comyns' Digest alone, which is contradicted in the same book, and which is certainly dealt with by the judgment of my brother Williams. In the result, then, I think it should be overruled, which practically is the question here, and that our judgment should be for the plaintiff. That is, the judgment is reversed.

Judgment reversed accordingly.

Miscellaneous News.

REPORT AND BALANCE-SHEET OF THE PHŒNIX GASLIGHT AND COKE COMPANY.

The following is the report for the half year ending at Midsummer, 1862, to be submitted to the proprietors, at the half-yearly meeting, to be held on the 27th instant.

Since your last meeting, a great length of large mains has been laid in the outer districts. Another new steam-engine is about to be erected at the Vauxhall Station; and lifts for raising coals by steam-power, with suitable apparatus for their distribution, are in course of construction both at Bankside and Vauxhall.

In February last, it was shown that £10,000 more capital was then required. An additional outlay of £9000 has since been made in plant extensions, and a further outlay of from £6000 to £8000 will probably be made before Christmas next. Your directors, therefore, recommend that a call of £3 per share be made, to be payable on the 21st of October next.

A net profit of £27,452. 6s. has been realized. Your directors recommend that a dividend at the rate of 5 per cent. per half year, as before, be declared, together with 15s. per cent., in augmentation of the dividend paid for the year 1856, in accordance with the provisions of the Metropolis Gas Act, 1860. This will leave an undivided balance of £5052. 5s. 2d. in hand.

Dr. *Abstract of the Trade Account, for Six Months, ending Midsummer, 1862.* *Cr.*

For Coals used			£28,195	16	1	By Rental for light	£67,610 4 11
Tradesmen's bills, for materials supplied			8,919	16	2	Coke made for sale	13,001 19 1
Law expenses			85	7	8	Breeze, ditto	259 0 10
Meters, and repairs thereof			1,327	16	9	Tar, ditto	2,348 9 8
Rent, rates, and taxes			2,922	7	6	Ammonia, ditto	1,258 0 11
Directors, £750; auditors, £50			800	0	0		
Salaries			3,359	11	8		
Wages paid			10,804	17	2		
Bad debts and allowances			422	7	5		
Balance of interest			187	9	0		
Net profit			27,452	6	0		
			£84,477	15	5		£84,477 15 5

Dr. *Abstract of the Balance-Sheet, at Midsummer, 1862.* *Cr.*

For Capital of 9000 £60 shares, £55 each paid up			£495,000	0	0	By Amount of plant at Christmas last		£458,991	18 8
Unpaid dividends			185	4	3	Add—			
Unpaid tradesmen's bills, &c.			8,978	13	10	Expended this half year in extension of works		9,170	9 5
Investment-fund			6,406	14	4			£468,162	8 1
Balance of profit and loss—						Securities for investment-fund		6,201	13 6
Undivided balance	£ 6,889	8 5				Amount due from sundries—			
Half year's profit	27,452	6 0				Midsummer quarter	£23,974 13 10		
			34,341	14	5	Arrears	2,836 7 7		
								26,811	1 5
						Amount due for coke	£1,863 4 2		
						Ditto breeze	374 1 10		
						Ditto tar	1,419 9 8		
						Ditto ammonia	440 3 1		
						Ditto sundries	2,086 8 6		
								6,183	7 3
						Stock of coals	£8,982 0 0		
						Ditto coke	29 8 0		
						Ditto breeze	13 15 0		
						Ditto tar	252 4 0		
						Ditto ammonia	233 16 0		
						Ditto meters	17,971 3 2		
								27,482	6 2
						Balance at treasurer's		10,071	10 5
			£544,912	6	10			£544,912	6 10

J. Church Bailey, Joseph Box. } *Auditors.*

EUROPEAN GAS COMPANY, LIMITED.

An Extraordinary General Meeting of the Proprietors of this Company was held on Wednesday, the 13th inst., at the company's offices, Frederick's Place, Old Jewry—SHEFFIELD NEAVE, Esq., in the chair.

The SECRETARY read the notice convening the meeting, and the minutes of the two preceding meetings were read and confirmed.

The CHAIRMAN said, those proprietors who were present at the last meeting knew—and the notice convening the meeting itself would have explained to those who were not—the object of the proposed extension of capital, the necessity for which arose from an extension of business; and he thought the step was one in which all the proprietors would concur, because it would be assumed, on all hands, that the proposed increase was for the benefit of the company. Indeed, it was the unanimous opinion of the last meeting, that steps should be taken to raise more capital. Two propositions were then considered—viz., whether the money should be raised by preference or by ordinary shares. There were some strong considerations in favour of preference shares, inasmuch as those who took such shares would be content with a less rate of interest than the company was paying upon the ordinary share capital. The object of the directors was, of course, financial economy. They had always endeavoured to use their finances as sparingly as possible, in order to make the gains of the company so much the greater. Preference shares would also have the recommendation of enabling every proprietor to exercise an option. Ordinary shares, however, were much more popular among the shareholders; and, considering all the circumstances, the directors, as a board, were now prepared to recommend the issue of ordinary shares. With that view, he (the chairman) would propose the following resolution—"That, in consequence of the increase of the business of the European Gas Company, Limited, the capital of the company shall be increased by the issue of 12,000 new shares of £10 each, or of any smaller number, and in any lots or portions, from time to time, as the directors shall see fit; such shares to be issued at par, or at such price or prices, and by such apportionments, and subject to such terms and regulations, as the board of directors may determine; and that the first call on such new shares shall be £2. 10s. per share on allotment; and that such new shares shall, in all other respects, be subject to the same laws and liabilities, and be entitled to the same rights and privileges, as the present existing shares: that clauses numbered 3, 29, 30, and 31, shall be considered as specially altered, amended, and controlled by this resolution, and shall be read and acted upon as if the increased capital herein provided for had formed part of their original provision; and that clause 82, as to the division of dividend and bonus of the company, and all other clauses of the said regulations, shall be construed and made applicable to the increased capital hereinbefore provided for: and that, with a view to make the said increased capital at once available, and as a monetary provision until the said shares shall be fully paid up, the board of directors shall have further power, from time to time, to borrow and re-borrow any sum or sums of money, in addition to the £75,000 already borrowed, but not exceeding the amount of calls unpaid, together with any balance yet uncalled, on any number of shares that the directors may be empowered to issue; and that such loans shall be at such rate of interest, and subject to such terms, as the board of directors shall see fit, and shall be secured on the property of the company by any of the instruments and in the manner prescribed by clauses 33 and 34 of the regulations of the company, as the directors shall see fit, and that clause 32 of the regulations of the company, and also the special resolution passed on the 7th of August, 1861, and confirmed on the 18th of September, 1861, to enable the borrowing of a further amount of £25,000, shall stand enlarged, amended, and controlled, by this resolution, so as to enable the further borrowing of moneys, as aforesaid; and that all other the clauses of the said regulations of the company shall be construed in connexion with these powers and this additional resolution, and so as to carry out the same, and make them effective."

Mr. HUGGINS seconded the motion.

Mr. FAWCETT thought there were one or two objectionable points in the resolution—first, in not stating that the shares proposed to be created would be at once allotted, in the proportion of one for every two shares now held. There would be a considerable difficulty if the directors were to choose to issue only 2000, 3000, or 4000. The capital had better be created, and the shares issued.

The CHAIRMAN said that by their deed the directors were bound to issue new shares *pro ratâ*, and their intention was at once to issue the whole of the shares, and to make a call of £2. 10s. upon each of them.

Mr. FAWCETT said that explanation was, so far, satisfactory; but, with regard to the borrowing powers, the directors proposed to take power to borrow before all the calls upon the new shares were paid up. He thought it would be worthy of consideration whether the directors should exercise the borrowing powers until, at all events, half of the new capital was paid up. He considered that it was a very objectionable thing to have a large liability upon any shares.

The CHAIRMAN said, if Mr. Fawcett's plan were carried out, it would oblige the directors to make haste, and call up the whole 50 per cent.; whereas, if they only called up 25 per cent., they would be enabled to borrow such money as they might temporarily require upon easy terms, and thus be enabled to pay a higher rate of dividend.

Mr. SMITH said that, by the resolution, the directors had power to issue the shares to the proprietors at a premium.

The CHAIRMAN replied, that the directors proposed to give each of the proprietors the option of taking their proportion of shares at par. Supposing all did not take them, there would then remain some which the directors might find persons willing to take at a premium.

Mr. FAWCETT thought that the course proposed by the directors was a fair one, because they were only giving themselves the benefit. Those shares which were not taken by the proprietors would be sold by the directors for the benefit of the company.

Mr. HUGGINS said that he was quite sure what was decided upon at the last meeting—viz., to raise an increased amount of capital, only a portion of which would be paid at the present time—was a very wise course, and, no doubt, would meet the concurrence of proprietors generally.

Mr. FAWCETT said it would be satisfactory, he thought, if they came to some distinct understanding that day, that the directors would not exercise their power of borrowing until 50 per cent. of the proposed new capital had been paid up. Then, as to the redemption-fund, he very much questioned whether it ought not to be specifically invested in something, and kept intact. He knew the healthfulness of the company; he believed he knew its capabilities; and any observations that he made were merely with a view of furthering the company's interests. He would advise that there be a call made of £2. 10s. at once, and that the directors should not exercise their borrowing powers until another £2. 10s. had been called for.

The CHAIRMAN observed that if every pound that was raised was made subject to dividends, the directors might have a difficulty in keeping up the amount of the dividend.

Mr. MARTEN proposed that the matter should be left to the directors.

Mr. BROWN called Mr. Fawcett's attention to the fact that, if the company were unable, by the tightness of the resolution, to borrow money for a temporary purpose upon easy terms from their bankers, it might greatly prejudice the company, and have the effect of lowering the dividend.

Mr. FAWCETT said that, if there was an understanding (for that would do with such men as the directors of the European Gas Company) that the directors would only borrow money for temporary purposes, and not permanently, till £5 per share was called for, he should be quite satisfied.

Mr. LEWIS said they had none of them any doubt with regard to the character and conduct of the present directors, but the resolution not only empowered the directors to issue shares of £10 each, but it went further; and, as they could not anticipate the continuance for ever of the present directors in office, he should like to have a clause inserted to the effect that no further sum than £5 a share should be called for without the sanction of the shareholders in general meeting.

Mr. HUGGINS said, in that case, their shares would be looked upon in the market as a delusion.

The CHAIRMAN replied that such a clause as the one proposed could not with consistency be inserted; but the proprietors might rely upon it, the directors would not in any peremptory way make a call upon them.

The resolution was carried unanimously.

Upon the motion of Mr. LEWIS, seconded by Mr. SMITH, a cordial vote of thanks was passed to the chairman, which was suitably acknowledged, and the proceedings terminated.

LIVERPOOL UNITED GASLIGHT COMPANY.

The usual Half-Yearly Meeting of this Company was held on Tuesday, the 19th instant, at the Board-Room, Newington—Mr. BATESON, chairman of the board of directors, presiding.

The SECRETARY (Mr. J. B. Lloyd) read the notice convening the meeting, after which the seal of the company was affixed to the register of proprietors. Mr. STEELE read the annual balance-sheet, after which the following report was submitted:—

The directors, at the meeting of the proprietors in August in each year, have to submit to the proprietors an abstract of the company's accounts for the year ending on June 30. The directors have this year, as they had the last, the gratification to inform the proprietors that the accounts show a surplus, after payment of the year's dividend, of £6970. 19s. 7d., from which sum there will have to be taken £4124. 5s. 10d. to be placed to the credit of the reserved fund, which will complete that fund, according to the provisions of the company's Act of Parliament. Owing to the continued increase in the consumption of gas, and the present state of the company's accounts, the directors have much pleasure in recommending that the following reduction in the price of gas, from the 1st of July last, be made—that is to say, to all consumers within the borough of Liverpool, of 2d. per 1000 cubic feet, and to all consumers in the out-townships of 3d. per 1000 cubic feet. This reduction will make the price, from the 1st of July last, within the borough, 3s. 7d., and in the out-townships 4s. per 1000 cubic feet. The proprietors will observe, from the newspapers, that the company has a suit in Chancery pending with Mr. Hills, in which it is alleged that the company has infringed the patent of Mr. Hills for the purifying of gas. When the case was before Vice-Chancellor Sir Page Wood, he granted an injunction against the company; but, on appeal to the Lord Chancellor, the injunction was dissolved, and certain points in the case were reserved for argument before him. These have been argued, and the matter is now waiting the judgment of his lordship. The directors recommend that the dividend for the half year ending the 30th of June last be £5 per cent. on the consolidated stock of the company. The directors beg to inform the proprietors that the four following gentlemen retire by rotation from the board of directors, but are eligible for re-election—namely, Mr. Charles Mozley, Mr. Charles William Reade, Mr. Henry Booth, and Mr. Samuel Henry Thompson; and that Mr. James Radley, one of the auditors, retires by rotation, but is eligible for re-election.

The CHAIRMAN, in moving the adoption of the report and the accounts, said the shareholders would observe that a reduction in the price of gas had been made in the town of 2d., and in the out-townships of 3d., per 1000 cubic feet. He might observe that the town lamps (or those belonging to the corporation) were being supplied at the same rate as to the town. In the out-townships it was different, the charge being so much per lamp, without any reference to reduction.

The report and accounts were then adopted, and afterwards, on the motion of the CHAIRMAN, seconded by Mr. G. H. LAWRENCE, a dividend was declared for the half year of 5 per cent., payable on the 21st instant.

The retiring directors were re-elected, and Mr. Radley appointed auditor.

The usual sum of £500 was voted to the directors for their services during the year, and, after a vote of thanks to the chairman, the proceedings terminated.

DR. J. NORTHCOTE VINEN'S REPORT ON THE GAS SUPPLIED BY THE SURREY CONSUMERS COMPANY:—

1862. Week ending.	Number of Observations.	Maximum Light. Candles.	Minimum Light. Candles.	Average Light. Candles.
Aug. 9	4	14·19	12·69	13·13
„ 16	4	14·61	13·10	13·87

The average volume of hydrocarbons, was 4 per cent., of carbonic acid, 0·75 per cent. There was no indication of sulphuretted hydrogen or of ammonia. The maximum pressure was 32-10ths, the minimum, 6-10ths,

METER-PROVING IN SHEFFIELD.—At a recent meeting of the Sheffield Town Council, it was stated by Mr. Alderman Saunders that, £177. 13s. 6d. had been received by the meter-inspector since September 1861, for testing meters, and that 5959 meters had been stamped. The receipts for the first eight days in August were £8. 9s.

TESTIMONIAL TO MR. H. BANNISTER, DEPUTY-SUPERINTENDENT OF THE CHARTERED GAS-WORKS, WESTMINSTER.—On Thursday, the 14th instant, the workmen employed by the Chartered Gas Company, at their station in Westminster, presented to their Deputy-Superintendent, Mr. Henry Bannister, a silver salver, as a mark of their general esteem and gratitude for his exertions in promoting the principle of temperance amongst them, and in the establishment of a library for their use. The men having assembled, a congratulatory address was read by George Barnes, the foreman of the engineers, expressing the high regard they all entertained for the gentleman they had met to do honour to. Mr. Bannister replied by warmly thanking the men for this mark of their good will, which he should treasure the more as he was not leaving the company's service, when such presentations usually take place, but should still work with them to promote the interests of the company; and he knew of nothing better calculated to secure unanimity of action in this respect as a good understanding between masters and men.

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That opinion has been endorsed by the jury in Class X. of the International Exhibition (several of them being eminent in science and engineering), having awarded the fac-simile of the National Standard and the other Gas Apparatus. Messrs. George Glover and Co. exhibit there the only medal for instruments relating to gas measurement which has been awarded in the Class. The award is for "*ingenuity, completeness, and efficiency of apparatus for measuring g as, a for excellence of material and workmanship.*"

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Printed conditions and other information may be obtained from Mr. O. Brothers, the Company's engineer, by whom Tenders in writing will be received until the 1st of September next.

Gas-Works, Blackburn, June 14, 1862.

TO ENGINEERS AND OTHERS.

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The Directors of this Company are prepared to receive Tenders for the making and fixing of a Wrought-Iron ROOF for a Retort-house.

Plans and specifications may be seen upon application at the company's offices, Cardiff.

Sealed Tenders, addressed to the Chairman of the Directors, and endorsed "Tender for Iron Roof," to be forwarded to the undersigned on or before the 10th day of September next.

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H. Bowen, Engineer.

Cardiff, Aug. 20, 1862.

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FOR SALE, bound in Calf, 917 pages, price £1. 11s. 6d., a few copies of Reports of Proceedings in Parliament, and elsewhere, on Matters affecting the Supply of Gas in the Metropolis, viz.: The GREAT CENTRAL GAS CONSUMERS BILL, 1850; The ARBITRATION BETWEEN MR. CROLL AND THE COMPANY, 1857; The MARYLEBONE GAS CONSUMERS COMPANY'S BILL, 1859; CITY GAS COMPANY'S BILL, Lords and Commons, 1859; and, The METROPOLIS GAS REGULATION BILL, Lords and Commons, 1860.
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These little books are intended for gratuitous distribution by gas companies. More than **200,000** copies have been circulated, exclusively of those in several Continental languages. The demand for them continues, and the author is thankful for the numerous assurances he receives that his publications have done good; making known the benefits, and thereby extending the uses, of gas.
Black Rock, Brighton, August, 1862.
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ENGINEERS & IRONFOUNDERS.
DURIE FOUNDRY,
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Gas Engineers and Contractors for Gas and Water-Works; manufacturers of Steam Engines and Exhausters, Steam Boilers, Gasholders, Cast-Iron Tanks, Purifiers, Condensers, Iron Retorts, Gas and Water Pipes.
Plans, Specifications, and Estimate furnished for new, or for extensions and alterations on existing, Works.

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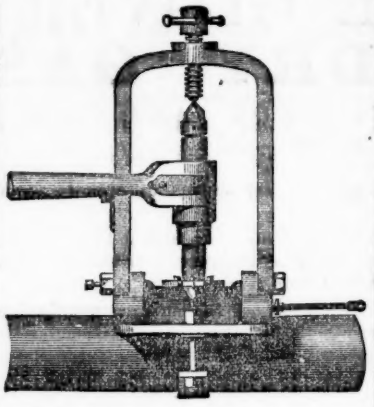
PATENT GAS AND WATER CONNECTOR.



This Machine is invaluable to Gas and Water Companies, Gas-Fitters, &c., being the only Connector whereby accidents can be prevented. It is simple in construction, economical in saving the escape of Gas, and can be worked by a labourer.
No. 1 size, to suit ⅜ and ½ in. Services, £6. 6s. each.
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Including Rachet Brace, Drills, Taps, &c., complete.

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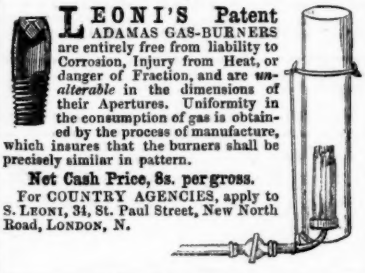
Connectors made for fixing on the ends of Mains, to prevent escape in course of laying.



LEONI'S Patent ADAMAS GAS-BURNERS are entirely free from liability to Corrosion, Injury from Heat, or danger of Fraction, and are *unalterable* in the dimensions of their Apertures. Uniformity in the consumption of gas is obtained by the process of manufacture, which insures that the burners shall be precisely similar in pattern.
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D. LANE'S PATENT.
This Governor combines great delicacy with remarkable certainty of action. A pressure of one-tenth of an inch of water, operating on a diaphragm of 3 inches diameter, is sufficient to work the Regulating-Valve of an Engine of any power.

TESTIMONIALS.

Borough Engineer's Office, Town Hall
Halifax, March 29, 1862.
Dear Sir,—I have much pleasure in bearing my testimony to the efficiency of your Duplex Governor for regulating the speed of Gas-Exhausters.
The Governor has been perfectly self-acting, and has never given us one moment's thought, trouble, or expense. The engine-man has only to weight the tappets to the required vacuum, and the pressure-register paper never shows a greater variation than three-tenths in the twenty-four hours.
I can very confidently recommend the adoption of it to engineers and managers of gas-works making 50 million feet a year and upwards.
I am, dear Sir, yours faithfully,
G. W. STEVENSON.
Denny Lane, Esq., Cork Gas-Works,
Ireland.

Gas-Works, Cork, April 4, 1862.
Dear Sir,—Having for some time past had in use three of your newly-invented Regulators for governing the speed of Steam-Engines in connexion with Gas-Exhausters, I am glad that I am able to speak of this valuable machine in terms of the highest praise. I have had them applied, as you know, to high-pressure and condensing engines, with Beale's and also Anderson's Exhausters. In every case, this small and valuable instrument is thoroughly effective in regulating the speed of the Exhauster. No amount of care with the hand can equal its accuracy of action for the intended purpose.
Denny Lane, Esq. A. H. STILL, C.E.

An Illustrated Circular, explaining the operation of the Governor, can be obtained by application to D. LANE, 72, South Mall, CORK; and the Governor can be seen in London at the Offices of GEO. ANDERSON, Esq., C.E., 16, Adam Street, ADELPHI.

GASOMETER for Sale, at Appuldurcombe Park, Isle of Wight. To be sold by Auction, by
Messrs. FRANCIS PITTIS and SON,
at the Star Inn, in Newport, Isle of Wight, on THURSDAY, August 21, 1862, at Three o'clock in the afternoon precisely. The Gasometer recently erected by the Appuldurcombe Park Hotel Company, in the Isle of Wight, comprising a Gasholder, 25 ft. diameter, 10 ft. deep, with iron guide-columns, rollers, valves, syphons, and stand-pipes. Also a cast-iron dry-lime Purifier, a Condenser, three cast-iron Retorts, and 700 yards of 3-in. cast-iron Main-Pipe. The above are from the manufactory of Amos Fletcher, Dudley.
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NEWCASTLE-ON-TYNE & MIDDLESBRO'-ON-TEES.
Wrought and Cast Iron Pipes, Cast-Iron Retorts, and all kinds of Foundry Work necessary for Gas-Works. Fire-Bricks and Clay Retorts. Gas Coals of every description. Pig, Bar, and Plate Iron.
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WHITEHOUSE and CO., Boiler and GASHOLDER MAKERS,
GLOBE PATENT TUBE WORKS,
WEDNESBURY,
Beg to draw the attention of Engineers and Managers of Gas Works to the superior quality of the Article they manufacture, both in respect of the iron employed, and the perfect manner in which it is welded; in proof of which they can refer to the testimonials of the most eminent Gas Engineers, and the experience of the principal of the large Gas Companies of the kingdom.
Orders promptly executed.

GEORGE CUTLER & CO.,
GAS ENGINEERS, &c.,
London Gasholder and Boiler Works,
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LONDON.

Rye, Nov. 12, 1860.
Dear Sirs,—I consider it incumbent on me to acquaint you that the alterations recently made on the Rye Gas-Works—viz., the addition of a NEWLY-IMPROVED WASHER, and other work for the Purification of Gas, executed by the experienced workmen under your able supervision—are perfectly satisfactory to the Company, and the Gas is now as pure as it can be made.
I am, dear Sirs, your obedient servant,
CHARLES THOMAS, Superintendent,
Rye Gas-Works.
Messrs. Cutler and Co.

WALTER MABON, Engineer,
ARDWICK IRON WORKS, FAIRFIELD STREET,
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Manufacturer of
IRON TANKS for Gasholders, Railway Stations, &c.
GASHOLDERS.—Extensive premises at Gorton, solely for the manufacture of Gasholders, and other heavy Wrought-Iron Structures.
GAS APPARATUS.—W. M. has an extensive assortment of patterns for Purifiers from 4 feet to 15 feet square, also round ones from 4 feet to 10 feet diameter; Scrubbers, Condensers, Washers, Columns, Girders, and Tripod Patterns, suitable for Gasholders, from 10 feet to 150 feet diameter, either Single-lift or Telescope. Contracts for Gas-Works of any Magnitude. Designs, Specifications, and Estimates furnished.
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IRON HOUSES, either for Dwellings, Manufactories, or Public Buildings.
PIPES and VALVES, for Gas and Water, from 2 inches to 48 inches bore.

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(*Close to the Society of Arts.*)

Mr. ANDERSON continues to Erect, or to supply the Drawings for his PATENT RETORT-SETTINGS. On this principle, three Ovens of Retorts are heated by one Coke and one Tar fire; and, for small Works, the principle is adapted to single Ovens in both cases, with a total absence of smoke, while the duration of the Retorts is from two to three years, and with great economy of fuel.
Mr. ANDERSON continues to supply his PATENT GAS-EXHAUSTER, together with Steam-Engines, &c., erected complete.
This is the most simple machine of the kind in use, being merely a double-action Pump, which any one can comprehend, and works for years without any repair.
Also, his PATENT FOUR-WAY VALVES. One of these valves does the work of three ordinary valves, when applied to Purifiers, Station-Meters, or other Gas Apparatus.
A workman cannot, by any possibility, make the mistake of shutting one passage without opening another; thus ensuring a constant flow of the gas.
All Racks, Pinions, Springs, and other delicate parts of ordinary valves, are in these valves abolished; the Connecting-pipes are also much simplified, and the cost reduced fully 30 per cent.
Also, his CONCENTRIC GOVERNOR, which stands in half the space of the ordinary Governor, and regulates the flow of Gas to the greatest nicety.
Mr. ANDERSON having five Gas-works on lease, besides being engineer to several others, has constant opportunities of perfecting his inventions before they are brought under public notice.

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28, BAGNIGGE WELLS ROAD, CLERKENWELL,

PATENTEE OF

DRY & IMPROVED WET GAS-METERS,

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GAS APPARATUS.

All Meters warranted to comply with the Act of Parliament.

WOLVERHAMPTON RETORT WORKS.

ESTABLISHED **1840.**

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GAS ENGINEERS, AND MANUFACTURERS OF CLAY RETORTS,

AND FIRE GOODS IN GENERAL,

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Retort Mouthpieces, Bolts, Nuts, and every description of Wrought-Iron Work.

Now ready, post 8vo., price 7s. 6d. cloth,

THE ANNUAL RETROSPECT

OF

ENGINEERING AND ARCHITECTURE;

A RECORD OF PROGRESS

IN THE

SCIENCES OF CIVIL, MILITARY, & NAVAL CONSTRUCTION.

VOL. I., JANUARY TO DECEMBER, 1861.

EDITED BY

GEORGE R. BURNELL, C.E., F.G.S., F.S.A.

It is believed that an annual review of our progress in the Sciences of Construction is a work the want of which has long been felt by professional men. No doubt there are already in existence publications which to a certain extent discharge this function, but the dates of their publication are so near to the discoveries they record, that they necessarily bear, more or less, an ephemeral character, on account of the prominence which must be given to the topics of the day. An *annual* review of the state of an art or science is to a certain extent removed from this danger, and should present the most important results of the year's labours in a more concise and more carefully arranged form. It is proposed, by the publication of the "Retrospect of Engineering and Architecture," to supply the want of a Review such as has been described.

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DEEPDALE FIRE-CLAY & BRICK WORKS,

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Manufacturer of every description of Fire-Bricks, Lumps, Quarries, Shields, Flue Covers, &c., to any size or shape required.

FIRE-CLAY RETORTS,

TO MODEL OR DRAWING.

B. G. begs to call the attention of Gas Companies to his Fire-Clay Retorts, which have been used with great satisfaction in some of the largest Gas-Works in the Metropolis and many Provincial Towns in England.

References given, if required.

PHŒNIX GASLIGHT and COKE COMPANY.

NOTICE is hereby given, that the ADJOURNED HALF-YEARLY GENERAL MEETING of PROPRIETORS, holding, previous to May 27 last, Five Shares and upwards in the said Company, will be held, pursuant to the Act of Incorporation, on WEDNESDAY, the 27th instant, at Twelve for One o'clock, at the Bridge House Hotel, in the Borough of Southwark, for the purpose of declaring a Dividend to Midsummer last; to make a call of £3 per Share, payable on the 21st of October next; and on other business.

By order of the Court of Directors,

CHARLES PRIDDEN, Secretary.

70, Bankside, Southwark, S.E.
August 14, 1862.

The half year's Dividend, as before, will be payable immediately after the business of the meeting has terminated; and afterwards at the Company's Office, at Bankside, on Thursday, the 28th instant, and also on Monday, the 1st proximo, on both days from the hour of Twelve till Three, and from that time on Wednesdays only, from Two till Four o'clock.

CRYSTAL PALACE DISTRICT GAS COMPANY.

NOTICE is hereby given that the ORDINARY HALF-YEARLY MEETING of the SHAREHOLDERS of this Company will be held at the Albion, 153, Aldersgate Street, in the City of London, on THURSDAY, the 11th day of September next, to receive the report of the Directors, the balance-sheet approved by the Auditors, to declare a Dividend, and for general business.

The Chair will be taken at Three o'clock precisely.

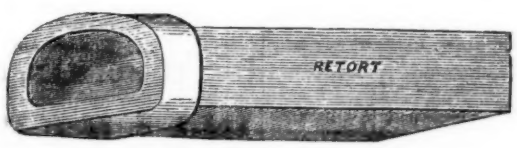
By order of the Board,

MAGNUS OHREN,
Secretary and Manager,

Offices, Lower Sydenham, S.E.,
August 28, 1862.

KING BROTHERS,

STOURBRIDGE FIRE-BRICK AND RETORT WORKS.

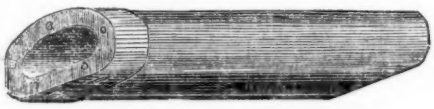


KING BROTHERS beg especially to call the attention of Gas Companies to the superiority of their Retorts, which are made from the celebrated STOURBRIDGE FIRE-CLAY. Mr. King has patented a Kiln for burning Retorts, by which Patent all Cold Air is excluded from the Kiln while burning, thus rendering them FREE FROM CRACKS AND CORRECT IN FORM. By great care in Manufacturing, combined with the advantages in burning, a VERY SMOOTH SURFACE is obtained, rendering them less liable to carbonize.

Retort Ovens, Fire-Bricks, Guards, Saddles, Rabbitted Bars, Flues, and Quarries, are all Manufactured of the same quality of Clay.

Every Retort and Brick is branded "King Brothers, Stourbridge."

FIRE-CLAY GAS RETORTS.



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WORTLEY FIRE-BRICK WORKS, near LEEDS,

Are Awarded the PRIZE MEDAL for Excellence of Material and Manufacture of Clay Retorts, July 11, 1862.

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THESE RETORTS are unrivalled in excellence, being the BEST FINISHED INTERNALLY, and THE MOST CORRECT IN FORM, of any in the Kingdom. From the peculiar composition used in working up the face of the material, they are rendered unusually smooth, close, and FREE FROM SURFACE CRACKS, thus, in a great measure, preventing leakage and the adhesion of carbon to their interior surface.

To meet the yearly increasing demand of UPWARDS OF THIRTY SEASONS and to carry out the late improvements in the manufacture, the Premises have been re-erected and much enlarged, and Engineers may rely WITH CONFIDENCE on their orders being completed with a greater regard to despatch than by any other House.

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Every article manufactured at their own Works and Mines, Brierley Hill.
FIRE-BRICKS, Lumps, Squares, Tiles, and Gas Retorts of all dimensions.
CRUCIBLE and CEMENT CLAYS.
GARDEN EDGINGS, of various patterns.
BUFF and ORNAMENTAL TILES.
CLINKERS and STABLE PAVINGS, noted for hardness and durability, being perfectly non-absorbent.
Shipments on the shortest notice.

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NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of Clay Retorts, Fire Bricks, and every description of Fire Clay Goods.

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AVOIDED BY COATING WITH
YOUNG'S IRON PAINT.
This Paint has been proved, by four years test, to stand all the purposes required in Gas-Works, and has the peculiar property of drying over work previously coated with Tar.
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AMBLECOTE FIRE CLAY AND BRICK WORKS,
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Late in the occupation of I. and W. King.
Originally J. Pidcock, Esq.
NB. A quantity of best Clay Retorts in stock, viz.—
Circulars, 14 inches, 15 inches, 16 inches.
D's, 16×12, 15×14, 20×16, 16×18.

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FIRE-BRICK AND TILE MERCHANTS,
Wholesale and for Exportation,
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GAS AND WATER WORKS.

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ALBERT KELLER, Ghent.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Albert Keller, of Ghent, begs to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by him. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.
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Station and Experimental Meters, Gas Pressure Registers, Gauges, Experimental Gasholders, Governors, Slide Valves, &c. &c.
W. and G. would respectfully call the attention of Gas Engineers and Managers to their Station-meters, having made and erected the largest in use at the present time, two of which may be seen at the Stockport and Liverpool Gas Works, on application to the respective Engineers.

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PADDON and FORD,
GAS-METER AND APPARATUS WORKS,
GRAY'S INN ROAD, LONDON.
MANUFACTURER OF WET AND DRY GAS-METERS, STATION-METERS, GOVERNORS, &c. &c.
A large number of **STATION-METERS,** up to 80,000 feet per hour (being by far the largest in use), and **GOVERNORS** for **MAINS,** up to 24 inches, have been constructed by Paddon and Ford. These Meters and Governors possess peculiar advantages as regards strength and freedom of action.
Sole Manufacturer of **PADDON'S PATENT STREET-LAMP REGULATORS,** for insuring any required consumption. These Regulators are in general and increasing use, and references can be given to Gas Companies who use them for every Lamp.

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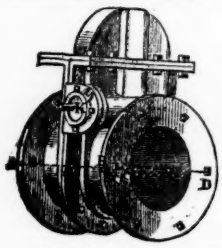
45, OXFORD STREET, LONDON;
Manufactory—Broad Street, Birmingham—Established 1807,
MANUFACTURERS OF GLASS CHANDELIERS, GLASS LUSTRES, TABLE GLASS, &c. &c.
ELEGANT CRYSTAL GLASS CHANDELIERS, for GAS, from £4 upwards (Made from "REGISTERED" DESIGNS), with GLASS BRANCHES, &c.; suitable for DRAWING-ROOMS and BALL-ROOMS. The more extensive use of GAS in private dwellings has induced Messrs. OSLER to direct their particular attention to the manufacture of this class of articles—which, with a view to their general adoption, are offered at very moderate prices. Purchasers can select from a great variety of patterns, to which additions are being constantly made.
THEATRES, CONCERT, ASSEMBLY, AND BALL ROOMS LIGHTED BY ESTIMATE ON THE LOWEST TERMS.



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List of prices, with full dimensions of all sizes up to 30 inches, to be had on application.
These Valves are all proved to 30 lbs. on the square inch before leaving the works, and are always kept in stock.
Valves made with Outside Racks to order. Also, Screw Water-Valves with Gun-Metal Faces.
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HOLMAN'S PATENT DOUBLE-ACTION PUMPS
Prove their general adaptation. They are adopted by
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For Pumping TAR, AMMONIACAL LIQUOR, WATER, WORT, and other fluids, their intrinsic excellence is too well known to need description.
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WALKERS GAS-VALVES
HAVE BEEN
DURING THE PAST TWENTY-FIVE YEARS,
USED IN UPWARDS OF
450 BRITISH and FOREIGN GAS-WORKS.
They are made in the most SOLID, SUBSTANTIAL manner, with PLANED and SURFACED JOINTS, and SCRAPED SURFACES. They have a CLEAR, FULL BORE, in a STRAIGHT LINE of PIPE, and are TIGHT to PERFECTION.
Engineers are requested to insert "Valves of Walkers Manufacture" in their Specifications, by which they will be absolutely certain of the above important advantages. They can name the construction of Valve they prefer best, as Walkers make them of every description—either Walkers SCREW-VALVES, for the Gas-Works or for Street-Mains; INTERNAL RACK-VALVES; or the ORDINARY RACK and PINION-VALVES. REGULATING-VALVES, with INDICATING COLUMNS, &c.
Walkers London Manufactory is devoted entirely to the above class of work, of which their make is nearly double that of any other British house.

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A Gas-Valve of each kind can be seen in the above Class. HER MAJESTY'S COMMISSIONERS selected Walkers Valves for the LIGHTING OF THE BUILDING, and the PRESSURE and SUPPLY is governed by Walkers Regulating Indicating Column and Valve, which can be SEEN IN ACTION in the the Gas-Meter Room, Austrian Court.

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Possess a most important practical improvement on the Stuffing-Box, effecting a large saving in a Water-Works Company's expenses. They are made with Four Gun-Metal Faces, scraped Surfaces, Gun-Metal Screws and Nuts, and are proved to three hundred pounds on the square inch.
IMPROVED DOUBLE-FACED HYDRANTS, &c.
Drawings and Prices on Application.
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Estimates and Designs for Lighting and Ventilating Theatres, Concert-Rooms, Public and Private Buildings, can be had upon application at the above Address.

Registered Designs of Crystal Chandeliers, for Gas or Candle, always on Show.

The PATENT GAS-REGULATOR AND PURIFIER, reduced to 6s. 6d. per dozen.

A Large Assortment of Gas Moons, Chimneys, and Reflectors, of every description, always on hand.

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IRON MERCHANT AND AGENT,

AND

Wholesale and Retail Charcoal and Coke Dealer, and Grinder,

12 & 31, BANKSIDE, & GREAT SUFFOLK STREET, SOUTHWARK, S.E.

ALL GOODS KEPT IN STOCK, AND SUPPLIED AT MANUFACTURERS PRICES.

Cast-Iron Socket, Flanch, Hot Water-Pipes and Connexions, for Gas, Water, and Steam purposes, Rain-Water-Pipes and Guttering, &c. Furnace-Pans and Stable-Fittings. Retorts, Hydraulic Main, Furnace-Work, &c. Lamp-Columns, Lanterns, Cocks and Burners, Wrought-Iron Tubing, &c., of best description. Screw-Cocks, Sluices, and Gas-Valves of every description. Bar, Rod, Plate, and Hoop-Iron Bolts and Nuts. Cast-Iron Columns, Girders, Street-Posts, Watering-Posts, Gutters, Gratings and Railing-Bars, Tank-Plates, and Pump-Castings. Engine, Mill, and Lathe Castings. Planing, Turning, and Boring executed. Cast-Iron Pans, for Soap and Chemical Works. Galvanized Cast-Iron Jars and Pots, for Sugar Refiners. Stourbridge and Newcastle Fire-Bricks, Retorts, Lumps, Tiles, and Clay. Malleable Iron Castings. Pipe-Laying by Contract. Double-Refined Machinery Oil. Iron Borings. Salammoniac and Sulphur.

Castings made in Town or Country, on the shortest notice, to Sketches, Drawings, or Patterns.

Best Animal Charcoal, for Sugar Refiners, and Case-Hardening.

Best prepared Wood Charcoal. Prepared Fuel for Smokeless Stoves guaranteed. Granulated Charcoal for Air and Water Filters. Chemists and Druggists supplied with Pulverized Carbon. Charcoal and Coke Blacking, and Coal-Dust, and superior strong Coke, for Foundry purposes. Gypsum of the finest and purest quality. Sulphate of Ammonia.

Estimates given, and Orders by Post punctually attended to the same day.

AGENT FOR

BECK'S PATENT STOP-VALVES,

For Gas, Water, Steam, and General Purposes, and

DAVIS'S PATENT COMBINED SMALL-COKE OR BREEZE OVEN, & SMOKE CONSUMER.

THE ALPHA TUBE WORKS,

WALSALL, STAFFORDSHIRE. ESTABLISHED 1830.

LAMBERT, BROTHERS,

MANUFACTURERS OF

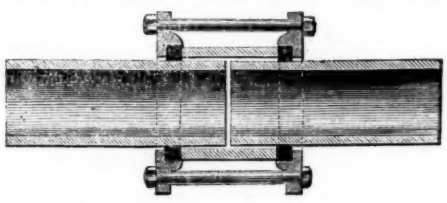
WROUGHT-IRON TUBES AND FITTINGS,

For Gas and High-pressure Water and Steam.

DR. NORMANDY'S

PATENT PIPE-JOINTS.

HOLLY BUSH PLACE, BETHNAL GREEN ROAD, N.E.



The advantages which these Joints offer are economy, perfect soundness and durability, ease and rapidity of application, use of perfectly plain pipes, without sockets, screws, or projections of any kind, so that a tight Joint may be made, even though the ends of the pipes to be united do not come close together. Any ordinary labourer is capable of securely fixing them.

These Joints are particularly applicable to gas, water, and suction-pipes, the Joints remaining permanently sound; they are cheaper than the socket and spigot at present in use for gas and water-pipes, inasmuch as they save the lead, the gasket, the iron forming the socket (which, for example, in a 3-inch main amounts to 10 lbs.), and the fire necessary for melting the lead; a considerable saving is also effected in the time of making the Joint, more than four Joints being completed in the time required to make only one of the others.

By unscrewing two bolts, a pipe can instantly be taken up or removed, and another substituted for it with the greatest facility.

By means of these Joints, pipes made of either wrought or cast-iron, copper, lead, tin, earthenware, glass, paper, bitumen, gutta-percha, suction-hose, and, in fact, any material of which pipes or tubes can be manufactured, may be rapidly and soundly united, and taken apart with extreme facility.

They are made of all sizes, so as to suit pipes ⅛ of an inch external diameter and upwards.

TO INVENTORS AND PATENTEES.

MR. W. H. BENNETT, having had considerable experience in matters connected with Gas, Water, and Sanitary Improvement, begs to say that he continues to assist Inventors in the perfection of their designs, and to obtain for them PROVISIONAL PROTECTION, whereby their invention may be secured for Six Months; or LETTERS PATENT, which are granted for Fourteen Years.

Patents completed, or proceeded with at any stage, thereby rendering it unnecessary for persons resident in the country to visit London.

Patents procured for Foreign Countries.

Information as to cost, &c., supplied gratuitously upon application to the advertiser, 43, Parliament Street, WESTMINSTER. [Office of the JOURNAL OF GAS LIGHTING, &c.]

GEORGE BOWER,

GAS ENGINEER, MANUFACTURER, AND CONTRACTOR,

ST. NEOT'S, HUNTS.

References to between 100 and 200 Gas-Works Designed and Erected by the Advertiser.

SAMUEL CUTLER, Gasholder MAKER and CONTRACTOR

For Tanks, Roofs, Purifiers, Condensers, Erection and Alteration of Works and every description of GAS APPARATUS.

PROVIDENCE IRON WORKS,

MILL WALL, POPLAR, LONDON, E.

Main Laying and Gas-Works erected complete.

JAMES OAKES and CO.,

ALFRETON IRON WORKS, DERBYSHIRE,

AND

WENLOCK IRON WHARF, 20, WHARF ROAD, CITY ROAD, LONDON,

Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water Works, including Iron Retorts, Socket and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.

N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.

CHARLES HORSLEY, Agent.

BIRTLEY IRON WORKS,

CHESTER-LE-STREET, DURHAM.

Manufactory for every description of Casting and Machinery for Gas Works and Water Works.

Warehouse in London for Cast-iron Pipes and Connections of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.

Office in London, Mr. E. M. PERKINS, 78, Lombard Street.

BEVERLEY'S Patent Equitable GAS-METER,

From which the Water cannot be abstracted.

JOHN BEVERLEY & SON,

GAS-METER MANUFACTURERS, &c.,

LEEDS, YORKSHIRE,

Are prepared to supply the above Meters, either stamped or otherwise, and to adapt their patented principle to any old Meters that may be sent to them to be repaired, tested, and stamped.

Manufactory, No. 9, Mark Lane, LEEDS.

ROBERT MACLAREN and CO., EGLINTON FOUNDRY, GLASGOW,

Manufacturers of all sizes of Cast-Iron Main Pipes, by an improved Patent. General Ironfounders, Gas Engineers, and Wrought-Iron Tube Makers.

LESLIE'S PATENTS: Gas and Coke from common Coal, greatly increased in value.—60, Conduit Street, LONDON, W.

LESLIE'S PATENTS: Up to Forty Candle Gas.—60, Conduit Street, LONDON, W.

LESLIE'S PATENTS: Licenses for England, Scotland, and Ireland, the 86 Departments of France and Belgium.—60, Conduit Street, LONDON, W.

LESLIE'S PATENTS: The National Waste Heaps at Collieries UTILIZED for Gas purposes.—60, Conduit Street, LONDON, W.

ALFRED PENNY, Gas and CONSULTING ENGINEER,

WENLOCK IRON WORKS,

21 & 22, WHARF ROAD, CITY ROAD, LONDON.

Mr. PENNY having had a large experience in the construction, alteration, and management of Gas-Works, begs to inform the Directors of Gas Companies that he may be consulted on all matters appertaining thereto. He also manufactures Gasholders, Purifiers, and all the various apparatus used in Gas-Works and keeps in stock Retorts and Mouthpieces, Socket-Pipes, Bends, Branches, T-pieces, &c. &c.

Plans, Specifications, and Estimates prepared.

GUEST & CHRIMES,

FOUNDRY AND BRASS-WORKS, ROTHERHAM,

AND

37, SOUTHAMPTON STREET, STRAND, LONDON,

(Late CROSLEY & CO.,)

GAS-METER MANUFACTURERS,

REMOVED, from 103, SOUTHWARK BRIDGE ROAD, LONDON, to

ROTHERHAM.

Gas-Meter Works, 103, Southwark Bridge Road,
London, April, 1862.

SIR,

I have the pleasure to inform you that I have ceased to be a gas-meter manufacturer, having disposed of my business to the well-known firm of Guest and Chrimes, of Rotherham, the makers of the Patent High-Pressure Water-Meter, and High-Pressure and Patent Fire-Cock, who will henceforth be the Sole Manufacturers of Crosley and Goldsmith's Patent Compensating Wet Gas-Meter.

The well-established reputation of that firm, as to quality of materials and workmanship of all goods supplied by them, is a sufficient guarantee that the character of these Meters will be maintained at the high standard of excellence which has always attached to them; and I have full confidence in asking for them a continuance of the patronage I have hitherto enjoyed from you.

My late manager, Mr. Lane, remains with Messrs. Guest and Chrimes, in the position he has held in these works since their establishment. Begging you to accept my best thanks for the favours I have received at your hands during my connexion with the business,

I am, Sir, yours most obediently, ISAAC BRIGGS.

Foundry and General Brass-Works, Rotherham, and 37, Southampton Street, Strand, London, W.C.
Rotherham, April 11, 1862.

We have the pleasure of informing you, as intimated in the annexed letter, that we have purchased the business of Mr. Isaac Briggs, of 103, Southwark Bridge Road, London, Manufacturer of Crosley and Goldsmith's Patent Compensating Gas-Meter, which it is our intention to remove to our works at Rotherham. The established character of the Meter for accuracy of registration needs no comment from us. It is especially constructed to meet all the requirements of the recently-imposed Sale of Gas Act, and upon such certain and simple principles as to insure correctness of measurement for long periods, without involving the necessity of constant care and attention on the part of the companies' inspectors and officers, as the large quantity of water contained in the surplus reservoir (except in extreme cases) will insure many months working. We have, therefore, the greatest confidence in soliciting your orders, feeling quite certain of their giving full satisfaction; and we would remark that, though apparently a high price, yet, when the quality of the workmanship and materials is taken into consideration, in addition to the large capacity of the Meter, and its other advantages, it will bear a comparison with any first-class article.

We would add that, although not enumerated, all the various articles made by the late firm will be manufactured by us, and under the same management as previously. We hope shortly to be in a position to submit to you a detailed description of the Meter, and all other articles we manufacture connected with Gas, its distribution and consumption, with prices of the same. Soliciting your commands,

We are, yours respectfully, GUEST & CHRIMES.

SOLE MANUFACTURERS OF

CROSLEY & GOLDSMITH'S

PATENT SELF-ADJUSTING & COMPENSATING GAS-METERS,

Which, by a simple arrangement of machinery, maintain a constant, true Water-Line.

N.B.—The Patent can be applied to any existing Wet Gas-Meters.

Manufacturers of EXPERIMENT METERS, GOVERNORS, MINUTE-CLOCKS, PHOTOMETERS, &c., &c., similar to those used by Mr. King, of Liverpool; and other Patterns.

Consumers' Governors; Inspectors' Pocket, and all other kinds of Pressure-Gauges; Thermometers;

STANDARD TESTING GASHOLDERS,

And Apparatus required under the Sales of Gas Act.

STATION-METERS & GOVERNORS; PRESSURE-REGISTERS & EXHAUSTER-REGULATORS.

Also, Manufacturers of LOWE'S PATENT MOTIVE-POWER METER, for situations where there is an inadequacy of pressure to supply the special requirements of certain consumers in low grounds during the day or night. Also,

MANUFACTURERS OF

BATEMAN AND MOORE'S, AND CHRIMES'

PATENT HYDRANTS, OR FIRECOCKS.

Improved Sluice-Cocks and Gas-Valves; Chrimes' Patent High-Pressure Single and Double Loose-Valve and Screw-Down Cocks; Pilbrows' Patent Water-Waste Preventer;

PATENT ABSOLUTE WATER-WASTE PREVENTER;

Siemens' Patent Balance Water-Meter; Bell and Chrimes' Patent Service-Box Valve; Improved Self-Acting and Pull Water-Closet;

ESKHOLME'S PATENT PNEUMATIC REGULATOR and VALVE-CLOSET.

Lowe's Patent Effluvia-Traps, Begg's Improved; Fire-Extinguishing Apparatus; Galvanized Iron Tubes and Fittings; *Gas Chandeliers, Brackets, and Fittings; Glass Chandeliers and Brackets.*

All the above articles may be seen on application to

THOMAS BEGGS, 37, Southampton Street, Strand, London; or to

GUEST and CHRIMES, Brass-Works, Rotherham,

Manufacturers of Plumbers' and Gas-Fitters' Brass-Work of every description.

Drawings, Descriptions, Prices, and Testimonials, will be forwarded per Post, on application as above.

International Exhibition,
July 11, 1862.
Class X., No. 2259.

The Jurors have **AWARDED A MEDAL** to
JOSEPH CLIFF and SON,
Wortley, nr. Leeds,
For Excellence of Material and Manufacture of
FIRE-CLAY RETORTS FOR GAS.

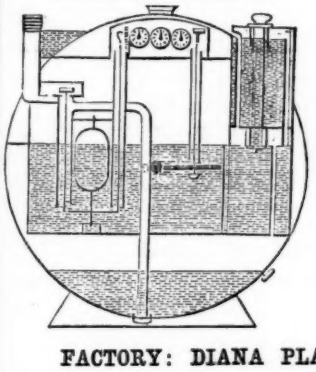
International Exhibition,
July 11, 1862.
Class XXXV., No. 6841.

JOSEPH CLIFF and SON,
Wortley, nr. Leeds,
Are Awarded Honourable Mention for
STONEWARE DRAIN-PIPES
OF LARGE DIAMETER.

TRUSS'S PATENT ELASTIC PIPE-JOINT,
FOR GAS AND WATER-MAINS, AND STEAM PIPING,
Is the only PERFECT joint that has ever been constructed, and supplies the long-felt desideratum, by allowing for the expansion and contraction of metals, and for oscillation and deflection, without impairing the joint. Gas Companies will effect an incalculable saving in adopting it, as compared with the present imperfect mode of jointing.
Drawings, Estimates, and every particular, furnished on application to
THOMAS SEAVILLE TRUSS, C.E., 53, GRACECHURCH STREET, LONDON, E.C.

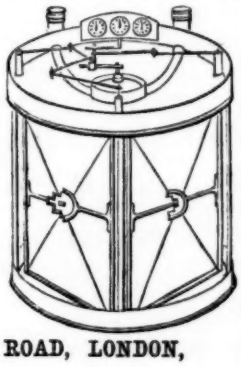
L L O Y D A N D L L O Y D
ALBION TUBE-WORKS, BIRMINGHAM,
MANUFACTURERS OF
WROUGHT-IRON TUBES & FITTINGS,
PLAIN, GALVANIZED, & ENAMELLED, for Gas, Steam, and Water, from ⅛ in. to 6 in. bore.
STOCKS TAPS, and DIES, GUN METAL GLAND-COCKS, WATER-GAUGES, &c.;
PATENT LAP-WELDED IRON TUBES,
For Locomotive and Marine Boilers, &c.
LONDON WAREHOUSE—No 66, QUEEN STREET, E.C.

PATENT WET METER.



N. DEFRIES,
CONSULTING GAS ENGINEER,
Inventor and Patentee
OF
WET GAS-METERS,
WITH SELF-ADJUSTING WATER-LINE;
DRY METERS,
GAS-HEATING BATHS, OVENS, STOVES,
GAS FIRES with INDESTRUCTIBLE FUEL,
&c., &c.

PATENT DRY METER.



FACTORY: DIANA PLACE, FITZROY SQUARE. OFFICE: 406, EUSTON ROAD, LONDON,
Eight Doors from Factory.

Attempts having been made to construct Self-Supplying Apparatus to Wet Gas-Meters upon the Bird Fountain principle,—which, although unerring to supply water in the open atmosphere, has not wholly succeeded so as to be relied upon when enclosed in a Gas-tight Meter Case,—N. DEFRIES begs leave most respectfully to acquaint Gas Companies, and the Public in general, that he has constructed his PATENT WET GAS-METER upon a method entirely different, being founded on the well-known principle of the self-acting supply of the Oil Lamp, which has never been applied for the adjustment of the Meter Water-Line before, and which, by the admission of external air to a chamber sealed from Gas, will never fail to faithfully perform its required function. They are of the very best materials and workmanship, will stand more pressure than is required as the test for soundness by the New Act, are guaranteed to prevent surreptitious burning without detection, and will be kept in repair free of charge for seven years.

N. DEFRIES'S CELEBRATED DRY METERS,
of which more than 80,000 are in use in Palaces, Churches, Chapels, Royal Dockyards, Club Houses, Public Offices, and other Buildings throughout the Empire and Continent, which have done so much in checking surreptitious burning, and simplified the fitting up of Gas.
To remove any doubt of accuracy of measurement his Meter for 1500 lights, in use upwards of ten years at the Royal Italian Opera, until that Building was destroyed by Fire, was long afterwards dug out of the burnt ruins, then tested by the Chartered Gas Company in the presence of George Lowe, Esq., F.R.S., and other Chief Officers, and found inflexibly correct. Also, on the 9th of June, 1858, at the Western Gas-Works, his Meter for 150 lights, after considerable use, was doubted, and subjected to the most variable tests—from the full lighting to a single Jet—and in each case, as in other instances, accuracy was finely indicated.
As to durability, his two large Meters at the Thames Tunnel have been in use night and day for upwards of twelve years—one continuation of dark hours—subjected to the wear and tear of seventy-five years as compared with the ordinary business hours of using Gas above ground.

LORD REDESDALE'S SALE OF GAS BILL.
All Meters constructed by N. DEFRIES are guaranteed to pass the Provisions of the Standard.
No alteration has been necessary in the Meters he continues to supply to the Chartered, Imperial, City of London, Equitable, and other large Companies, his accustomed range of 1 per cent. over and under meeting all the desired requirements; whereas, by the New Act, a greater departure from accuracy—viz., 2 per cent. fast to 3 per cent. slow—is permitted.

International Exhibition, 1862.

MESSRS.

CROLL, RAIT, AND CO.,

Manufacturers of Croll's Patent Improved

DRY GAS-METER,

Exhibited in Class XXXI. (B),

Have obtained the Medal for

"GOOD CONSTRUCTION AND SOUND WORKMANSHIP."

FACTORY:

CANAL BRIDGE, KINGSLAND ROAD, LONDON, N.E.

ALEXANDER WRIGHT,

55 and 55A, MILLBANK STREET, WESTMINSTER, S.W.,

MANUFACTURER OF

CONSUMERS' COMPENSATING & NON-COMPENSATING WET GAS-METERS,

Of the best material and workmanship, carefully adjusted to meet the requirements of the SALES OF GAS ACT.

STATION-METERS & GOVERNORS,

WRIGHT'S REGISTERING PRESSURE-GAUGE, EXHAUSTER REGISTER, & REGULATOR;

STANDARD TEST GASHOLDERS;

Consumers' Governors; Inspectors' Pocket, King's, and all other kinds of Pressure-Gauges; Thermometers for Condensers, Pressure Registers, &c., &c.

EXPERIMENTAL TESTING APPARATUS,

Employed by the best experimenters in this country and on the continent, and by the Gas Testers in the London districts.

PHOTOMETERS, SPECIFIC GRAVITY APPARATUS, BI-SULPHURET OF CARBON TEST, THOMPSON'S BROMINE AND HEATING POWER OF FUEL TESTS, IMPROVED ALKALIMETER, EXPERIMENTAL METERS AND GOVERNORS, MINUTE CLOCKS, &c., &c.

"Analysis of Gas for Practical Men," by A. WRIGHT, M. Inst. C.E., post-free for 13 Stamps. PRICE-LISTS ON APPLICATION.

JAMES MEACOCK,

PATENT DRY AND WET GAS-METER MANUFACTURER,

7, SNOW HILL, AND 16, WEST STREET, LONDON.

ESTABLISHED 1836.

J. M. invites attention to his Improvements in EXPERIMENTAL WET GAS-METERS, by which he renders impossible any Leakage from the Stuffing-Box.

These METERS are GUARANTEED to meet all the Requirements of the SALE OF GAS ACT

GOVERNORS, STATION-METERS, PHOTOMETERS,

EXPERIMENTAL TESTING GASHOLDERS, HIGH-PRESSURE GAUGES,

AND ALL APPARATUS IN USE AT THE GAS MANUFACTORY.

D. HULETT and CO., 55 and 56, HIGH HOLBORN, LONDON,

PATENTEES and MANUFACTURERS of the ONLY GOOD MERCURIAL GAS REGULATOR,

invite the attention of Gas Companies and the Trade generally to their Improved GAS-METERS, which they warrant equal to any in Quality, Workmanship, and Simplicity of Construction, and the only Meters from which Gas cannot be obtained without being duly registered.

MANUFACTURERS OF

GAS CHANDELIERS, GLASS LUSTRES, HALL LANTERNS, VESTIBULES, BRACKETS, PENDANTS;

DOUBLE CONE, ALBERT, SHADOWLESS, & EVERY DESCRIPTION OF BURNER, UNION JETS, BATSWINGS, ETC.;

IMPROVED FULL-WAY CARTER'S VALVES (much approved of);

GAS-STOVES, and every article connected with Gas Apparatus.

CAST & WROUGHT-IRON PIPE BLACK & GALVANIZED. COPPER, TIN, BRASS, & COMPOSITION TUBING.

D. HULETT'S IMPROVED SERVICE CLEANSER

for clearing out Mains, Services, and Interior Fittings—60s. net.

Boyle's Patent Silvered Glass Combination Reflectors and Outside Lanterns.

Sole Manufacturers of Church and Mann's Photometer.

Large Pattern Books, with every description of Gas-Fittings, Chandeliers, &c., with complete Book of Prices, 12s.

London: Printed by WILLIAM BOUGHTON KING (at the Office of Clayton and Co., 17, Bouverie Street, Fleet Street); and published by him at No. 11, Bolt Court, Fleet Street, in the City of London.—Tuesday, August 26, 1862.